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DECORATIVE GILDING,

Silvering Plate Glass,

Restoration of Oil Paintings,

Cleaning Old Engravings,

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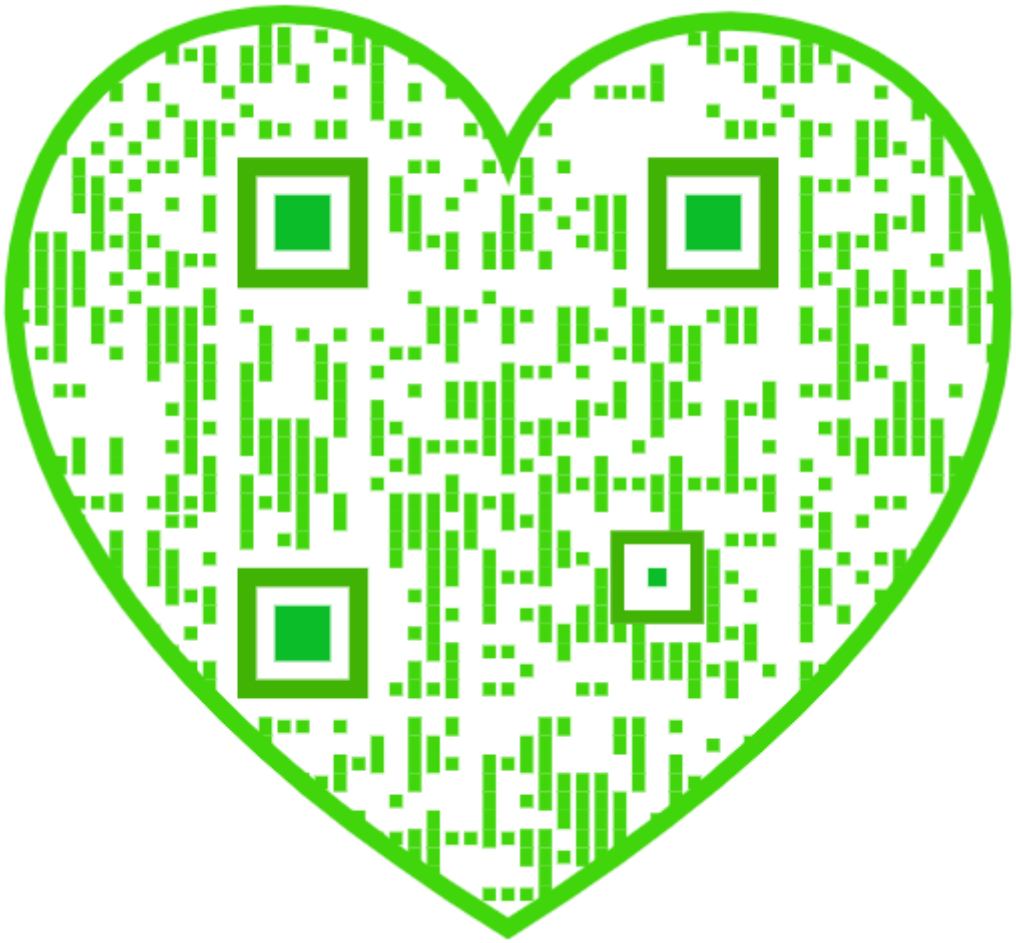

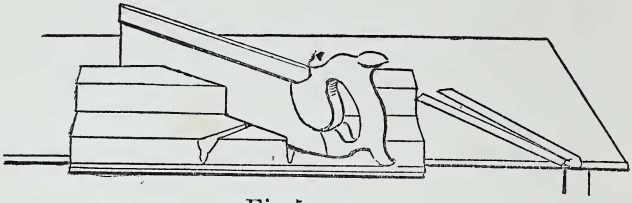

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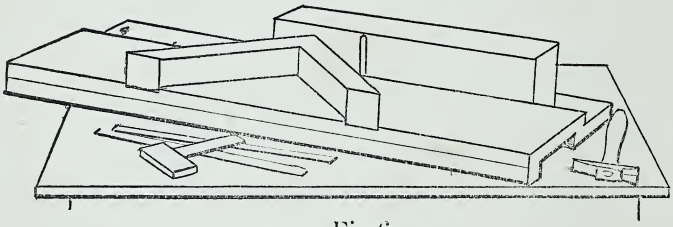

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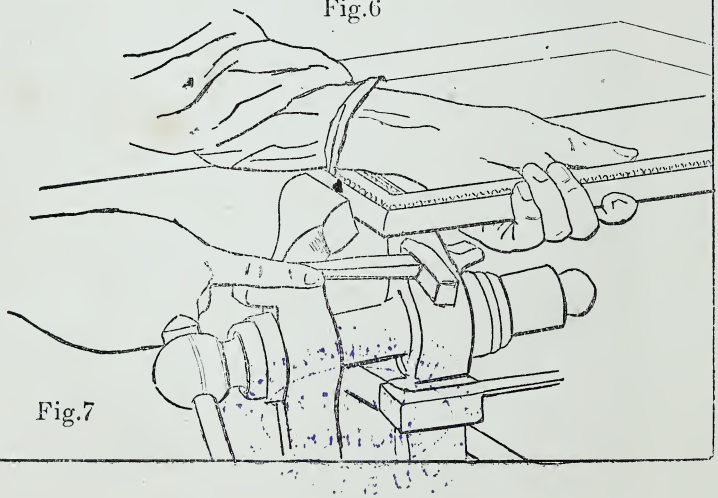

Fig.7

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Preface.

The writer of this little Volume unfolds the art of Gilding, Picture Frame Making, Restoration of Oil Paintings, &c., with other information interesting to the Trade generally.

It will be found useful to masters, journeymen, apprentices, amateurs, and others seeking the information it is designed to give, and will serve as a Hand-Book even to the more experienced in the art, as occasion may require.

The modus operandi *of the various branches of the art has been given as explicitly as possible, and a number of practical receipts added, which will be found to be of service.*

The instruction given is from practical experience, and perfectly reliable, and will afford most satisfactory results if followed.

Nearly the whole has been written specially for this work, but a few extracts from various sources have been inserted and acknowledged.

If any comprehensive book on the subjects treated on had been published, this volume would not have been written, but it is

intended to supply a want, and a measure of success is anticipated in consequence.

If I get appreciative readers who can say in the words of Tennyson—

> Well hast thou done,—
> In setting round thy first experiment
> With royal framework of wrought gold,

the effort will not have been in vain.

THIRD EDITION.

Another edition having been called for in less than twelve months, the Author has taken the opportunity to add new chapters on Mount Cutting, Hanging Pictures, and other subjects which will be found useful. A few extracts have also been inserted, which will stand on their own merits. The Author has been more solicitous to secure technical accuracy than literary excellence. The work has had a wide circulation, as the Publisher informs him he has received several applications from New Zealand, Quebec, America, and gold dust from Australia as payment. It has been favourably reviewed, and extracts have been copied into American as well as English periodicals.

FOURTH EDITION.

In the present edition new matter to the extent of about thirty pages has been added, with several engravings.

A PRACTICAL HAND.

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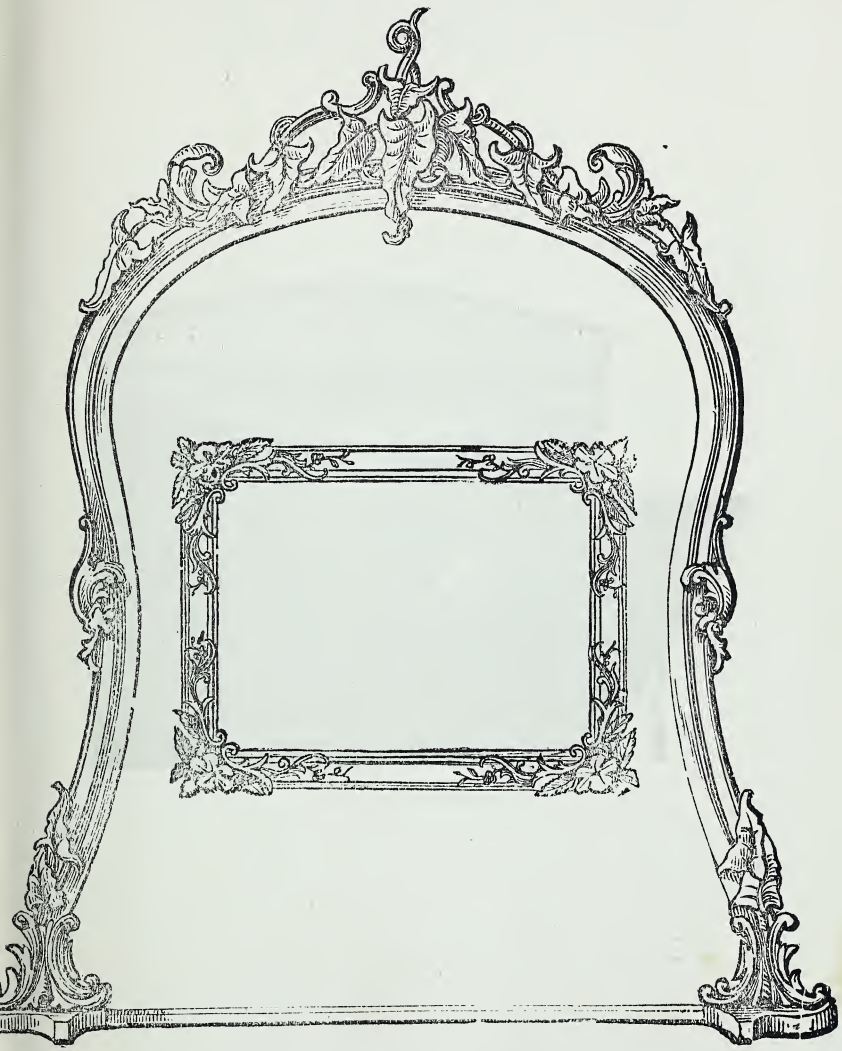
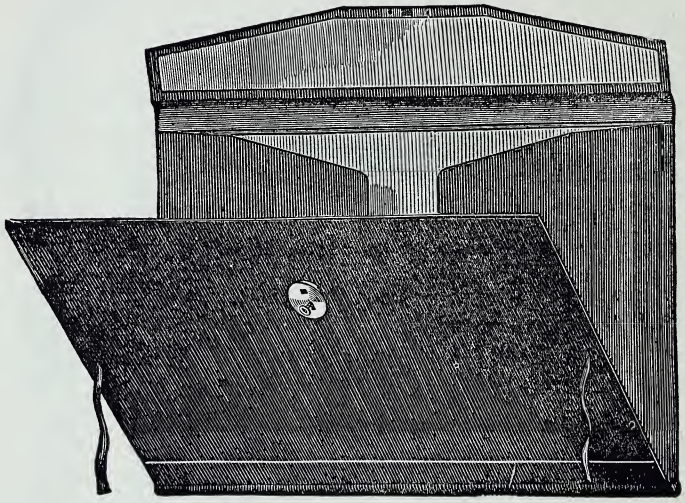


Chimney Glass.



Portfolio, with Lock.

The Practical

CARVER & GILDER'S GUIDE,

AND

PICTURE FRAME MAKER'S COMPANION.

INTRODUCTION.

THE art of Carving and Gilding is of very ancient date. Even before the arch was invented, or the pyramids built, Carving and Gilding was practised. The ruins of ancient cities show that the Assyrian and Babylonian could design and execute, even at that early period, some of the most beautiful work, not excelled at the present day.

More than a thousand years before the Christian era, we read of Solomon who built the temple, that "The cedar of the house within was carved with knops and open flowers;" "And the

whole house he overlaid with gold;" "And he overlaid the cherubim with gold;" "And the floor of the house he overlaid with gold within and without." *

In the time of Moses the craft of the carver and gilder was thought most honourable, for Belzaliel of the tribe of Judah was called to work in gold and silver, and also in the carving of wood and of stone, and worked in making the tabernacle in the wilderness; and not only did the Jews delight themselves in practising the art, but the Romans and Greeks used the precious metals as a decoration for their temples and houses, and on festive occasions gilded the hoofs and horns of the animals they were leading to sacrifice. The gold-leaf of the Romans was much thicker than the leaves of the present day; for Pliny, in giving a description, tells us that the old Roman gold beaters could not get more than 750 leaves, "four fingers square," from an ounce of gold; and historians tell us Nero caused the whole interior of the theatre at Pompeii to be gilded for the day when a feast was offered to Tiridatus, king of Armenia.

Through all ages and in all civilized countries this kind of decorative art has been cultivated; but it was probably never practised so extensively, or with so much taste and skill, as at the present day.

Before proceeding with the task before us, it may not be out of place to offer a few introductory remarks on the contents of this volume. *The Carver and Gilder's Guide and Picture Frame Maker's Companion* is meant to be a handy book of reference to all who may be engaged in gilding or frame making. The term carver and gilder is assumed when no carving is performed in the proper sense of the term. One reason for assuming the title of carver may be, that picture and looking-glass frames are oftentimes decorated with "Composition

* 1 Kings, vi., 18—30.

Ornaments;" and when they are gilded they look like expensively carved work. Although we shall devote some space to carving, it is not our intention to go into the details of this branch, which is a trade of itself, but most particularly into the silvering of plate glass; manufacture of picture and looking-glass frames; oil and water gilding, as applicable to picture frames, console tables, window cornices, &c.; also as an interior and exterior decoration for rooms and shop fronts; the restoration of oil paintings; cleaning and mounting prints and engravings; mount cutting; mitreing up mouldings; fitting up pictures; and also to give a number of tried practical receipts used in the trade. On these subjects it will be our endeavour to afford the most reliable information in our power, and at the risk of being thought by the competent workman prolix in our instruction, the most minute details for successful work will be given in the branches treated upon. Although much in this little volume may not interest the really practical man, yet it is probable he may get information from its pages he did not before possess, and many of the receipts will be found to be worth much more than was paid for the volume.

We would also remind the tyro that the utmost cleanliness is necessary to produce satisfactory and beautiful work. Clean pots and brushes are indispensable—gold size, carefully covered from the dust—clean bench—clean habits and careful manipulation, will most certainly contribute to a successful result. Labour and material are sometimes lost owing to inattention in this particular.

One word more to the aspirant for honourable distinction in wielding the knife and tip, and laying on the shining metal—Be not dismayed at failure, but PRACTICE AND PERSEVERE!

MOULDINGS.

A FEW words on Mouldings may not be deemed out of place, as the variety and quality offered to the trade are open to remark; information will be acceptable to those who may be seeking it.

There was a time in the history of the trade when the carver and gilder who had an order for a frame, had either to make, or get made, the pattern moulding required; but with an increased population, and higher intelligence, a taste for the fine arts has become more popular, and consequently the carver, gilder, and picture frame maker has been patronized to a much greater extent, especially since the introduction of the beautiful art of photography. Within the last quarter of a century moulding manufactories have sprung up in London, and in some of the principal towns in England; in such demand have been picture frame and other mouldings, that the engineer has applied his knowledge for a more rapid production, and has produced a machine that, by the aid of steam power, will turn out an enormous amount of work.

There are four classes of Mouldings in use, viz.—Wood Mouldings—Mouldings in the White—German Mouldings—and Veneered Mouldings.

MOULDINGS are often ordered by the carver and gilder for the apprentice to practice on in whitening up, as it is absolutely necessary for them to learn the rudiments of the trade. The

mouldings sometimes come to hand in a very rough condition, but this is of little consequence, as the whitening up removes this defect and the whitening takes good hold of the wood.

It is expected of a frame maker that he will be able to match any particular pattern that may be required, and to this end it is necessary that he should be able to make lengths of mouldings of almost any pattern. As before observed, mouldings can be bought much cheaper than they can be made by the picture frame maker; yet, occasionally it will be necessary that the mouldings should be made, and it is handy for the frame maker to be able to produce the pattern in the required wood.

Some shops are provided with a circular saw driven by the foot, with a crank motion and a fly wheel, and where this is the case it will be found useful in cutting out the rabbets as well as getting out the lengths to the required size; the saw, by an easy contrivance, being lowered to any required height from the bench. A section of the moulding required will facilitate the work. It will sometimes be necessary to glue two pieces of wood together to get the required shape, and this will be better than working the pattern out of a solid piece. The pieces should be sawed out to their proper widths and thicknesses, and the two surfaces to come together must be planed very smooth. Rather thin glue should be used hot and quickly applied, when a steady movement of the top piece backward and forward will force out the superfluous glue, and leave the two pieces of wood well joined together. In country shops it is necessary to use handscrews to keep the lengths well down till they are dry. The pattern must now be worked out with planes, and various sizes should be at hand suitable for beads, hollows, &c. The sizes and patterns must depend on the section the workman has to work out. The use of these planes require practice, and great care must be exercised in sharpening them,

as they are rubbed with oil stones ground to the shape of the plane iron.

If the moulding is mahogany or oak it will require glass papering and French polishing or varnishing. If it is in pine and is meant to be gilded, it must be whitened up before it is made into a frame. Instructions in French polishing and varnishing will be found at the end of this volume.

Sometimes knots and cross-grained wood occasion some trouble to get out smooth, but patience and skill will accomplish the hardest work.

Mouldings in the White, as they are technically called, are mouldings covered with whitening ready for the gilder. In manufactories the whitening up is performed much more expeditiously than in the carver and gilder's workshop, as this process has become a distinct branch of the trade, and mouldings ready whitened up are therefore purchased and kept in stock.

The manufacturer has certainly not been behind in producing patterns to suit the requirements of the public, as their name is legion; and great taste has been exercised in the patterns produced, the neat ornaments with which they are mounted oftentimes contributing much to their beauty.

The technical name of a moulding is sometimes descriptive of the members contained therein—thus, we obtain the names, bead; bead and flat; bead flat and hollow; flat and hollow; and then again there are mounted mouldings, distinguished by the manufacturer by number. The most useful and popular mouldings are made in several sizes, and any pattern the gilder may require can be made to order. These mouldings are always made in lengths of twelve feet. Competition has brought into the market a lot of inferior articles, which it is not economy in the carver and gilder to purchase, as they are found to be most defective and unsatisfactory. They are made

out of cheap wood, with ornaments defective and broken, all of which must be remedied by the workman before proceeding with the work.

GERMAN MOULDINGS.—Mouldings are so called because they are produced in Germany, and have only been introduced during the present century. They are used for common work, and for those whose means will not allow them to order gold frames. These mouldings are whitened up, then covered with *silver* leaf, after which a lacquer is spread over them, giving them a gold colour. They are usually made with very common wood; the rabbet is very shallow, and when exposed to the light for any length of time, they become a bad colour. They are washable. There are various qualities, the best of which is not a bad imitation of some of the gold patterns. There are a large variety of patterns, including imitations of various woods, such as rosewood, oak, mahogany, walnut, &c.

VENEERED MOULDINGS.—These, too, are made by the large manufacturers, of any pattern required, and in any wood. The most popular patterns are O. Gee, double O. Gee, reversed double O. Gee, dromedary, beads, &c.; and these of various widths and qualities;—the commoner sorts are not nicely finished. A few years since a quicker way of veneering them began to be practised—laying on the veneer from the sight edge round to the back hollow in one piece. This was done by means of heat. The best mouldings are very nicely made, with prime wood for a foundation, and finely-figured maple or other wood is well laid down, and carefully French-polished. The rabbet will be found to be deeper than in the commoner sorts, which is an advantage where deep gold insides are to be introduced.

These mouldings are made in twelve-feet lengths, and it is necessary to keep them laid flat, or they may warp, when it will be found more difficult to make them up into frames.

PICTURE & LOOKING-GLASS FRAMES.

THE style of frames for paintings and engravings has altered considerably during the last century. Frames for pictures were generally carved before they were placed in the hands of the gilder. Early historical English prints were framed in narrow black frames, with a carved and gilt edging at the sight and outside edge. But the art of composition ornament-making superseded the carved frame by mouldings whose plainness was relieved by ornaments made of composition.

The taste of centuries has established the fashion of having heavier frames and bolder ornaments for oil paintings than for prints, engravings, or drawings. The carver and gilder should be a man of taste, and be able quickly to decide what frame or ornament would be suitable for any particular class of picture, as his opinion is often required as to the effect certain patterns would have on various classes of pictures. In giving advice on these matters, the pocket of the customer must sometimes be studied.

Some patterns have been adopted by portrait painters, and called after their names; hence we have the *Lawrence* pattern,

a pattern employed by the late Sir Thomas Lawrence for the frames of nearly all his portraits. It is peculiar, inasmuch as the frame is square on the outside, and the sight edge is oval; the space being filled with small ornamental work. There is also the *Carlo Maratti* pattern, which is a broad, bold pattern, containing a running leaf or sprig, known as the "Carlo-Maratti leaf," the workman clipping it to the "Calmarat pattern." Another pattern now in use is called the "Birket Foster" pattern, and was designed by that eminent artist as suitable for water-colour drawings. Frames for oil paintings are also made in imitation of the antique, and are varied in their character.

For engravings of any size meant to decorate a best room, a medium moulding, with an inside flat and hollow, ornamented with corners and gilded, would be suitable; while the same picture for a room of more humble pretensions and a smaller purse would be framed in maple and gold. For water-colour drawings, photographs, and pictures of a light character, thin neat mouldings, with light elegant corners, are generally preferred.

For sacred subjects an Oxford frame is often chosen, especially when the subject is not too large. This kind of frame is not mitred, but made with + corners. They have not been introduced many years, and were originally made in oak, but they are now oftentimes made of deal, whitened up, and gilded. A number of ornamental patterns are in the market, some of which look very well. The small ivory frames for cabinet and carte-de-visite sizes may be had at many fine art repositories.

The following remarks on picture frames, pictures, and their surroundings, from the *Builder*, are well worth a careful perusal, as they were evidently written by one who had given this important subject his attention :—

Having the picture, we should feel disposed to take note after it of the frame which surrounds it, for it is impossible to see the one without the other, they both filling the eye at one and the same time. Then there is the wall surface at the back of the picture, helping or disturbing it in no small degree, for it is quite possible to put out all the colour of a fine work by a too glaring background. Then there is the light that must needs come in from somewhere, pleasant or unpleasant, the light being reflected in the picture. Then, again, the mere position of the picture as regards the angle at which the light, come from whence it may, strikes the picture surface. To the artist, at least, this is all-important; he never forgets to look to it while the art-work is in his own studio. It is really surprising to think how many thousands of good pictures there are scattered about in all directions, and in all orders of keeping, that are all but lost from the truly unhappy state of their surroundings, and from the incongruities about them. Even in princely mansions this is found to hold, wealth itself not appearing to be all-potent here. In such great picture displays as the annual Royal Academy one, it is of course necessary to sacrifice much for the mere sake of room and wall-space, so that complaint as things are, artistically, is perhaps vain; but in permanent exhibitions, whether great or small, we most surely ought to expect better arrangements in all ways.

It would perhaps be hard to instance anything secondary of more importance to its primary, the very cause of its existence, than is a picture frame. The picture itself is first—that is certain: but its surrounding frame is so important and telling a part of it that it cannot be neglected: it must be looked at whether we will or no. The very perfection of a frame would perhaps be—could we but imagine perfection to exist anywhere—in its not being noticed at all; but, as all know, it is impossible to go through any fine collection of paintings, or through a noble gallery or suite of rooms filled with pictures, whether ancient or modern, without being struck more or less with the "frames" which surround the at times priceless pictures. We have all heard of how at times things so secondary as they seem become important when the causes of them are but partially or dimly visible. Sir Humphrey Davy, a man of science, but not of fine art, saw picture galleries as others did, but his remark on the show was but an exclamation of wonder at the "extraordinary display of fine frames." He, indeed, saw nothing but the gilded frames. So much has been said and written about "colour" by those who see somewhat deeply into the things of art, that it may

seem surprising that more has not been said and written on the subject of the "frames" which edge pictures round, and at times, truth to say, well nigh kill their colour. Let any who care for these things consider it well. We may be thanked for calling attention to picture frames, if but the too heavy and too gorgeous gilding were removed—if only for experiment's sake—from round and about some pictures we could name, and the pictures were seen in their full force and beauty. What would Davy have said had he been compelled to look at the pictures?

And now for a thought on the "gallery," or room, in which the picture is exhibited, and on the wall of which it is hung: the colour and nature of the wall-space, and, more than all, the kind and amount of light which comes in to make the picture either visible or invisible—for it does at times come even to this pass. It is really a matter to be wondered at to see how great a difference there is, as it seems, between the same picture as seen by the eye in a good light, and the same picture in a bad light. It is not to be estimated in words. None, perhaps, but the workman himself—the executive artist—can realize this difference to the full. To see a fine picture in the studio of its painter, without its future broad and massive gilding round it, and on the easel on which it was painted; and, more than this, in the light carefully tempered and regulated, which satisfied the eye of him who painted it; and then to see the same picture in another place, with all its new surroundings, is to see another object! No wonder the workman trembles at times as he sees his cunning work pass away from his own keeping into that of others, not quite so knowing as himself, and not quite so deep in the mysteries of art. It is possible to kill a good picture by the very size and heaviness and coarseness of the details about it, more particularly if it be a small one, and very delicately and lightly painted. We have been powerfully impressed at sundry times with this fact. The room or gallery should be subdued to the picture, and be compelled to harmonize with it, in colour most surely, if not in form and details. A fine-toned painting makes a dull walled room live.

But if all this, and so much more, may be said of picture-placing and exhibiting in the quiet home corners, what shall be said of great galleries and whole suites of gorgeous and elaborately-furnished rooms, wherein every object far and near comes almost of necessity into the field of view,—the floor, the ceiling, the walls, furniture of the most costly kind, and even massive chandeliers, all competing

with the picture? In some fine picture displays which we could name, the really noble pictures are all but lost, and the eye needs to be shaded to fairly see the cunning work in each one of them. Now and then it happens a special and most convenient picture-viewing apparatus is provided for the smaller pictures. This is not simply, be it observed, a purely artistic problem: it is a scientific one as well, for it includes in it the very nature and construction and use of the eye itself. The eye cannot see clearly all the objects before it at once. A something is always wanting in clearness of definition, and one bright colour is found sometimes to help, but sometimes to kill or to change, at least, another near it. Some of these optical effects, scientifically looked at, are exceedingly interesting, and not a little curious and startling. It would be well if some experiments could be systematically made to test them, and a record made of the results. If generally accessible, they might serve as guides and cautions to very many who have control over these things. A picture, be it observed, is a brain thought, let into a noble room, always present, and surely mere "upholstery" should give way to it.

But if all these influences bear so heavily at times on the picture, of whatever order it may be, still more important is the influence on it of the light which serves to render it visible. A picture seen by sunlight, one seen by the light from a pure blue sky, and one lighted up from a skylight filled with ground glass, or the light from a dull cloudy sky, will change its colour in a very surprising way. This may at times be tested in our public galleries, and the varying effects noted. A pure colourless light is doubtless the one thing needful. A picture then has to rely wholly on its own internal force, and neither gains nor loses. It is simply made visible. It would be well to keep these facts—for facts they are—well in mind. All are nowadays more or less interested in pictures, and all are therefore equally interested in seeing them under the best possible conditions. Of *light* first of all. And not only is the kind of light which falls on a picture, whether more or less pure, but the degree or quantity of it, a matter of no less importance. It is quite possible to throw too much light on a picture surface, as well as too little. In a finely-tempered as well as pure light, is to be found the best condition under which a picture can be seen. Whether this finely-tempered light is best admitted through a window in the wall of the room or gallery, or through a skylight in the roof, might well be made the subject of special experiment, for it makes more difference than many would be apt to imagine. A high light in a side wall does its work well.

We have left ourselves but a brief space to note another item which would, if duly attended to, help matters where the collections are large. We allude to the practice of cramming a room with a vast multitude of pictures of all sizes and, at times, of shapes. A picture much above the eye-level is all but lost and invisible; the workmanship of it cannot be seen, and the artistic touch is thus far totally lost; while a picture on the very ground– and things go to this here and there—becomes a matter of positive pain to get at it at all. Of course all cannot be equally well placed; some must necessarily suffer, more or less, in the press for room where the picture display is a large one; but much might be done to mend matters in very many places we could name. It is better, surely, to be able to see a *few* pictures well than a whole numberless host indifferently, or hardly at all, from very crowding. When very large canvases fill nearly the whole wall of a large room, it would seem injudicious to add a number of small pictures. The small pictures get lost, and the eye, in looking at the large one, gets distracted. We have commented thus on these, may be, too familiar things, in the hope of lessening apparent difficulties here and there; for a thoroughly well-placed picture in a room in harmony with it is surely still, after all efforts, a *desideratum*. We have said nothing of "decorative" pictures, as such may be termed, when they form an integral part of the wall of a noble room. When will the time come when this may be done, and examples of it pointed to?

As it has been already shown that mouldings are expeditiously turned out of a manufactory, so are looking and pier glass frames ready whitened up and mounted for the gilder to commence work upon.

The first looking-glasses made in England were used as pier glasses, and afterwards chimney glasses became fashionable.

During the latter half of the last century the frames for looking-glasses were of a set and decided pattern, and were, generally speaking, more architectural in their character than they have since been. There was a broad cornice on the top, with a frieze below it, on which was represented some allegorical subject: the sides consisted of a column or pillar on a flat ground. The Corinthian order was sometimes adopted, and

terminated with capitals and bases of the same; square blocks were placed under the base, and the cornice was supported by the capital. This style was succeeded by doing away with the moulding and frieze, and substituting a column of the same order as the sides. Not half a century ago the columns were dispensed with altogether. The sides and top of the frame were made of equal width, and consisted of a flat ground, bounded at each edge by a hollow or some other moulding, and the corners were ornamented by carved or composition ornaments.

The next style may be called the "modern antique," in which the style of the times of Charles II., Anne, and Louis the Fourteenth prevailed.

At the present time glass frames are made of every description and style, so that any style of furniture can be matched, either mediæval or modern.

Where the centre and side ornaments are bold scrolls and heavy ornaments, they are generally carved; but flowers, ferns, and small ornaments are made in compo. and laid on.

There are two shapes, technically called "landscape" and "pier." The "*landscape*" glass is long, and the "*pier*" is upright and can be had oval, square, and shaped patterns.

Although any size can be made to order, yet the following are standard sizes, and frames are kept in stock of the following sizes, rabbet measure :—

PIER.

40	in.	high	by	30	in.	broad.	60	in.	high	by	48 in. broad.
44	,,	,,		34	,,		70	,,	,,		44 ,,
50	,,	,,		40	,,		70	,,	,,		50 ,,
54	,,	,,		44	,,		70	,,	,,		30 ,,
56	,,	,,		44	,,		76	,,	,,		48 ,,

LANDSCAPE.

40 in. broad by 30 in. high.	40 in. broad by 36 in. high.
44 „ „ 30 „	50 „ „ 40 „

While on the subject of looking-glass frames, we will mention *Console Tables.* This is a comparatively recent addition to the drawing room. It consists of an ornamental gilt table, with a marble top, sometimes screwed to the wall; over the table is a handsome glass, in size and character to suit the room. No article in a good room attracts the attention like a noble and brilliantly gilt console table, and at evening parties both ladies and gentlemen can see and be seen in this elegant glass.

As the carver and gilder is sometimes required to supply dressing glasses, a few words on the manufacture of these articles may not be amiss.

The frames for mahogany dressing glasses are made wholesale by foreigners in a particular part of London, and produced at very low prices. They are produced at such a low cost only by making hundreds of the same pattern at one time, and a division of labour on the various parts of the frame. Some of the modern toilet glasses, such as the large cheval glasses which rest on the ground, are elegantly ornamented and gilt in the same style as the modern-antique chimney classes. In this case the mahogany frame maker has nothing to do with their construction; the ornament maker and the gilder supply his place.

Although the greater part of the carver and gilder's work is picture and looking-glass frames, yet a large variety of articles are always being gilded and re-gilded. In some of our elegantly-furnished drawing rooms, chairs, ottomans, console tables, &c., in white and gold, are conspicuous for their beauty, as well as many other articles of tasteful manufacture. We will here quote a few sentences from a little work entitled the "Carver and Gilder," published by Houlston & Sons:—

"Many of our readers will remember having looked when children, with wonder and delight, at the minature representation of their faces in a convex mirror; indeed, the property which such mirrors have, of throwing reflected light in almost every direction, gives them a very brilliant appearance. When they were in fashion as part of the furniture of a room, the frames that held them were subject to as great a variety of patterns as the chimney or pier-glass frame. A favourite pattern was to have a broad, bold moulding, with a circle of gilt balls reflecting in the hollow; branches, on each side, held cut glass lustres; while an eagle at the top held in his mouth a chain, which seemed to hold up the branches. The circle of balls gradually became disused, and a circular moulding—necessarily in the form of a ring—was laid on a flat ground, similar in form to the style of glass frame prevalent at the same period. It will not be necessary, however, for us to enter into further details on this subject, as these mirrors, elegant as they unquestionably were, may be regarded (so far as fashion is concerned) as things of by-gone days.

"Window cornices, which like looking-glass and picture frames, have generally been gilt, have also like them, gone through many changes of form. At one time an eagle, perched on a long cornice pole, held up the drapery by his mouth. At another time, carved wreaths, sunflowers, &c., were placed over the window, and the drapery hung from or round them. Of late years, however, a form which more correctly claims the name of cornice, has been adopted. It consists of a broad frieze or panel, over which is a projecting cornice, and at the bottom edge of which are festoons or arches, either carved, or formed of composition, and which—as well as the other parts of the cornice—are gilt. This style admits of great variety; and at the present day some of the ornamental cornices are

exceedingly beautiful. We doubt not, however, that ever-changing fashion will present us with some new forms before long: indeed it is not unfrequent to see the frieze or flat part of the cornice coloured similar to the walls of the room, having burnished gilt mouldings above and below.

"Gilt bordering round the top and surbase of the room is a frequent and elegant finish to the work of the painter and paper-hanger, and comes under the hand of the gilder. They are made of wood, and vary from a quarter of an inch to four or five inches in width, and great diversity of pattern is displayed.

"Some very elegant productions in the form of tripod stands, flower and trinket baskets, candelabra, fire-screens, &c., have lately become the work of the gilder; chiefly through the circumstance that composition ornaments can be made with so much facility to imitate the antique carvings which are now in favour. The framework of which they are made is of wood, and the ornamental details of composition; the whole being afterwards gilt. In the case of fire-screens, it is very frequent for the central part to be occupied either with silvered plate glass, or with a highly finished painting or drawing. In this case the gilt portions of the screen have the character of a frame to hold the glass or picture, and a stand to support the whole.

There are many other articles which occasionally go in to the gilder to be gilt; but what we have mentioned are the principal; others of a minor character need not be particularized.

—o—

A good taste in art feels the presence or the absence of merit; a just taste discriminates the degree—the *poco piu* and the *poco meno*. A good taste rejects faults; a just taste selects excellencies. A good taste is often unconscious; a just taste is always conscious. A good taste may be lowered or spoilt; a just taste can only go on refining more and more.—*Mrs. Jameson.*

PLATE GLASS.

THE discovery of the manufacture of plate glass is said to have been accidental. Blancourt relates, as the mode in which the casting of plate glass was discovered, "that a person who was melting some of the material for the manufacture of ordinary glass in a crucible, accidentally spilt it while fluid upon the ground. The material ran under one of the large flag stones wherewith the place was paved, which obliged the workmen to take up the stone in order to recover the glass. He then found it in the form of a plate, such as could not be produced in the ordinary process of blowing. The man's attention being roused by this fact, he was unable to sleep, and, conceiving at once the superiority of this method for forming mirrors, he immediately commenced experimenting, and before the night was gone had proved the practicability of the improvement." Such was the origin of an invention which has received a wonderful impetus from the removal of excise restrictions, and from the general demand for all that can embellish and enliven a home. The first plate glass made in England was of the kind called "Vauxhall plates," which were distinguished by having the edge bevelled or shaped off all round. Two of the most notable establishments for the manufacture of plate glass,—that of St. Jobin, in France, and

that of Ravenhead, in Lancashire, are minutely described in Dr. Are's dictionary. The manufactories of plate glass are some of the largest in England—that at Ravenhead is most extensive, in which there is one room 339 feet long by 155 feet wide, and as high in proportion. A short account of the manufacture of plate glass may not be unacceptable.

Plate glass is composed of *Soda* and *Sea Sand*—four parts of the latter to one of the former; quicklime, nitre, and broken glass in small quantities are also added. Flints, ground very fine, are sometimes employed instead of sand. The soda is extracted from salt, and the quicklime is employed to make the ingredients mix and melt, and is called a *flux*; *cobalt* and *manganese* are employed to neutralize the colours that are natural to the materials employed. An intense heat is applied to the ingredients, in earthen pots, when the boiling liquid is poured on a flat metallic table, and after it is cool, the grinding and polishing complete the process. The plates are then taken to the the wareroom, where they are set up on their edges with paper between to prevent them from damage.

The manufacture of glass has its home in the Midland Counties, and Stourbridge is the chief centre of the industry. In the Stourbridge district there are ten flint glass works, two bottle glass works, and one plate glass establishment, giving employment altogether to 1,200 men, 150 women and girls, and 350 boys.

The duty on glass was repealed in 1848, and the immediate consequence was an appreciable increase in the number of flint glass establishments. But for some little time past there has been a tendency towards the concentration of the business in the hands of a few factories. There are at Smethwick some very large works, and among them that of the Birmingham Plate Glass Company. There is likewise situated the enormous

and world-famed establishment of Chance, Brothers & Co., producing crown, sheet, and rolled plate glass.

In 1838, Mr. Robert Lucas Chance, of the last-named firm, successfully introduced the manufacture of Bohemian sheet-glass into the district. Mr. James Chance perfected the process of grinding and polishing sheet-glass, now known as patent plate.

Foreign glass is used in large quantities in England, and is sent out in boxes, each containing about 300 feet. The sheets are of various sizes, and nearly colourless. The best quality is used to glaze a large number of pictures sent out by the picture frame maker. Ship loads are imported from Germany, as it is much lower in price than the English *crown* glass.

Silvering Plate Glass.

If any of our fair friends are curious to know what lady first beheld herself in a reflecting surface, and was pleased at the sight, we should hazard an assertion that she was one of the most beautiful God ever made, and lived at an early period of the world's history in the garden of Eden, and that her name was Eve. And in asserting this to be the case, we fear no contradiction, as the chronicled authority of Milton gives us the information in Eve's own language :—

"I laid me down
On the green bank, to look into the clear,
Smooth lake, that to me seem'd another sky ;
As I bent down to look, just opposite
A shape within the wat'ry gleam appear'd
Bending to look at me ; I started back,
It started back ; but pleased I soon return'd,
Pleased it return'd as soon with answering looks
Of sympathy and love."

Polished surfaces, or what we now call looking-glasses, have

been held in repute by the ladies of all nations, and the more civilized and refined brought them into general use. The ancient Jewish ladies had looking-glasses, for on the authority of an old book written in Hebrew, we are told that some part of their ecclesiastical furniture was made "of the looking-glasses of the women assembling" of polished brass, Exodus xxxviii., 8; and in another old authority written in Greek, there are many references to the reflected human figure in a glass. From that time to the present, both for ornament and use, polished surfaces have been in requisition; but at no period has the beauty of the frame or the perfection of the looking-glass been equal to the best productions of the trade at the present time.

Plate-glass intended for looking-glasses undergoes a process called silvering. The metal employed for this purpose is mercury, or quicksilver, and is imported into this country from Spain, Austria, and other countries. The quicksilver is extracted from a mineral called cannibar, which abounds in Almaden. At the last-mentioned place there are ovens that will contain as much as ten tons; and by heating and other processes from twenty to seventy per cent. of quicksilver is extracted from this mineral ore. The mercury is imported in iron bottles containing about 100 lbs. each.

The amount of quicksilver which the various mines of the world are capable of producing is very large—much larger, in fact, than is demanded for any purposes to which it is at present applied, and the only reason why it is held so high is that a few parties have the control of the supply of the world. The Almaden Mine, in Spain, discovered in 1497, yielded for 250 years from 550,000 to 650,000 lbs. per annum. In 1750, when the Huancavelica Mine of Peru caved in, and the supply from that source was temporarily cut off, the Almaden increased its production to about 2,016,000 lbs. per annum, and has

continued to yield that amount ever since. The Santa Barbara Mine, of Huancavelica, which had up to 1867 produced 80,000,000 dollars' worth of quicksilver, is now abandoned. The reasons given are its distance from seaboard, low grade of ores, and scarcity of fuel, being unable from these causes to make any profit in competition with the other great mines of the world. The Idra Mine, in Transylvania, is another of the important mines of the world, and its production is from 600 to 800 flasks per month. The ores are of a low grade. This mine is under lease from the American Government.

The process of silvering is a most unhealthy employment, as the mercury or quicksilver acts most injuriously on the human system, and but few persons of advanced age will be found engaged in the business. Silvering common glass is much more unhealthy than plate, as the process causes a light blue powder to float in the air, and these metallic particles are drawn into the lungs. The sight, the breath, and the memory are sometimes affected by this subtle fluid.

Some persons think the back of the looking-glass is coated with silver; but this is not the case. Quicksilver literally means "living silver," and the name was applied to it by the ancients on account of its peculiar property of rolling about.

Mercury or quicksilver will not adhere to glass without some other substance being used to cause it so to do, and it has been found that *tin foil* will answer this purpose. Tin foil is very thin, and will easily combine with mercury, and both, under pressure which excludes the air, adhere pretty firmly to the glass.

We will now briefly explain the process of silvering:—

This is performed on a *silvering table*, composed of slate or marble, which must be perfectly flat: round the margin of the table a groove is cut to form a gutter to carry off the superfluous quicksilver, and one end is raised and lowered by means

of a screw. The table is raised by the screw till it is quite level, when a sheet of tin foil is unrolled on the table an inch larger each way than the plate proposed to be silvered, and rolled with a wooden roller till it is *perfectly smooth.* Tin foil is made all widths and sizes, and for large glasses thicker than for smaller ones. The plate being cleaned, the silverer pours out the quicksilver from the iron bottle into a wooden bowl, and with a ladle covers the tin foil with the liquid on *every part.* The plate is then *slid* on to the quicksilver, the edge of the plate coming in contact with the quicksilver first. The sliding of the glass pushes before it the greater part of the quicksilver, as it nearly touches the tin foil. The reason for so putting on the glass is to exclude all air bubbles and impurities, and to cause only a thin film of mercury to remain between the tin foil and the glass. It requires practice to be able to so slide the plate on to the table as to present an even and solid appearance.

When the plate is placed on the tin foil to the workman's satisfaction, he then proceeds to weight the glass with iron or lead weights covered with leather, the superfluous mercury is pressed out, and only a thin film of mercury and tin foil remain. There is no danger of breaking the glass from the heavy weight put upon it when the table and glass are both quite flat. The silvering table is then lowered at one end, and the mercury runs off into the groove, and from thence into a receptacle placed at one of the corners of the table. The plate is allowed to remain with the weights upon it in the inclined position for five or six hours, and when the glass is large, all night, so that as much of the mercury as possible may be pressed out. When the weights are removed, one end of the glass is raised higher than the other, and supported by blocks on the table, when tin foil is laid on the lower end to draw off the loose mercury which collects at

the bottom of the glass. The glass remains in this position for hours or days, according to its size.

The glass must now be carefully removed from the table. If it be a small one, the operator can raise it himself by the edges, and carefully place it against the wall with the same edge on the floor as was lowest on the table. If of large dimensions, careful handling with several workmen will be necessary. One corner should be lower than the other to facilitate the draining, and when no more mercury drains from the plate it is ready for use. It is found that the mercury and foil have united and attached themselves to the glass.

Commoner glass for cheaper purposes is also silvered, but such heavy pressure is not used, as the glass would probably break, being much thinner and more uneven.

These thin small common sheets are silvered on a flat board. The plates being small, the mercury when poured on to the tin foil is covered with a sheet of white paper, and the glass is laid on the top, when with a dexterous pull the paper is brought out from between the glass and the quicksilver, the hand of the operator being on the plate to prevent it from slipping. This process requires practice and dexterity; yet the silverer, who is sometimes an Italian, will silver a hundred dozen in a day. It is usual to silver the concave side of the glass, and a high heap is laid one on the other, and left to drain. The silvering will be found not to be so perfect as plate, in consequence of the unequal pressure.

Silvered plates require to be placed in their frames with the edge on the bottom from which the mercury drained on the table, and in removal to any place it should be kept the lowest edge, as the undrained mercury, in attempting to drain in an opposite direction to that which it had before followed, disturbs that portion which had become nearly hardened, and gives it

the frosty, powdery appearance which oftentimes disfigures a looking-glass.

Plate glass, as used for chimney glasses, varies in quality; and low qualities, which are full of defects, are used for the cheap glasses. In order to see if a silvered plate is perfect, lay it down flat before a window, when all defects will be at once visible, whether it be from a bad plate or stains or defects in the silvering. Sometimes smears and other defects can be detected that will not rub out; these are on the silvered side of the glass, and were not cleaned off before silvering.

Looking-glasses, on being put up in damp rooms, oftentimes contract mildew, which eats through the amalgam at the back of the glass, and even into the glass, when re-polishing and re-silvering will alone remedy the evil.

There is a tendency in the quicksilver to drain for months in very small quantities, and if the silvered plate is turned upside down the plate will be damaged by defects as described. Sometimes if the glass has been only placed on its side for a short time it will cause a defect. In removing furniture, due care should be exercised in keeping looking-glasses in an upright position, as valuable glasses are often damaged in this way without their owners knowing the cause. The only remedy is re-silvering.

The "Pure Silver" Process.

A process is now extensively in use, by some called patent silvering, where a very thin film of pure silver is spread over the plate of glass, and is attached so firmly as to allow a coat of paint to be laid on, thus effectually preserving the silvered side from damp or accident. The plates silvered by this process can be handled as ordinary glass without danger to the silvering.

In describing this process, we cannot do better than give the

description of the editor of the "Furniture Gazette," who paid a visit to a manufactory, and has given a clear description of the process as he saw it carried on :—

As an additional illustration of the truth enunciated by King Solomon, that "there is nothing new under the sun, and that which was is that which hath been," we have now, in the latter years of the nineteenth century, returned to the old mirrors of the ancients, and are manufacturing them of *pure* silver, albeit of a somewhat thinner substance than the plates beaten out and polished by those worthies of old. We recently paid a visit to the establishment of Mr. J. Pratt, at Wellington Street, Blackfriars Road, where we inspected the process of coating looking-glasses with pure silver, and which we will now proceed to describe, as the latest and probably the ultimate attainment in the manufacture of mirrors.

It will be remembered that in the amalgam process of silvering, the metal is first prepared upon a level table, and the glass pressed down upon it, having its silvered side therefore underneath, and this necessitates its being subsequently reversed. In the case of the new process the glass is laid down first and the silver placed upon it, nor is it necessary that the glass should be once moved during the entire process of manufacture.

The glass to be silvered is first washed thoroughly with pure whiting and putty-powder in the usual way, distilled water being used throughout ; it is then well rinsed, and placed horizontally upon a rack-table ; here a solution is poured upon the now cleaned and still wet glass, which to all appearance might be water, for unless seen in bulk it appears perfectly transparent and colourless. This solution may be called, for want of a better term, a mordant, as its action is somewhat of an analogous character. Then the glass is removed to the silvering table, where it will remain until the various processes are complete. This table is of a peculiar character, the top surface being of half-inch slate, covered with linen ; it also has a gutter about 6 in. wide by an inch or two deep, with a fall running all round. Under the slate slabs, which are supported by minature joists, is a receptacle for hot water, which is maintained at a heat of 110° Fahr. This is for the purpose of accelerating the various drying processes through which the glass has yet to pass. Having been laid perfectly level upon this table, and still wet with the mordant solution, the glass is covered with a saturated solution of

nitrate of silver. Immediately on this coming in contact with the mordant, a precipitation of the pure silver takes place, and this precipitate adheres to the surface of the glass as an impalpable powder, as fine and smooth as the glass itself. The nitrate is allowed to remain on the glass for about ten minutes, until it has all precipitated ; the glass is then wiped with a leather "squeegee," which removes the surplus solution, leaving the nitrate precipitate adhering to the glass. The coating of silver thus obtained would suffice, but lest any portion should have escaped it is customary to repeat this operation after having washed the first coating of silver with distilled water. After the second application of nitrate of silver the "squeegee" is again brought into requisition, and, after a second washing, the actual silvering is complete and the glass may be left to dry ; this, however, takes place in a minute or two, owing to the great heat of the table. As the surplus liquid twice cleared away from the surface of the glass still contains a certain quantity of silver, it is allowed to run off the edges of the table into the gutters before mentioned, and from thence into receptacles, where the pure metal is regained by various known processes. The table itself, with its covering of linen, receives also a certain quantity of silver, and once a year the linen is removed and burnt with a flux, and the pure metal is thus recovered. The tables vary in point of size, the largest in use in Mr. Pratt's establishment being 15 ft. by 9 ft., but it is quite possible to silver a plate considerably larger than the table by this process, provided only that the glass be kept perfectly level, so that the nitrate solution may not run to waste.

The glass silvered by the old process labours under the serious disadvantage of the amalgam being entirely unprotected by any coating in contact therewith ; any attempt to paint, varnish, or otherwise secure the quicksilver from injury, results in the disturbance of the film ; consequently it is impossible to do more than a thin board will effect, placed at such a distance from the amalgam as to secure it from being touched in any way. Of course this is the merest apology for a covering or protection of any kind, and as soon as this backboard becomes broken or injured the term of existence for that looking-glass may be easily calculated. This is not so with the new process, which receives a coating of varnish upon the nitrate deposit immediately on its becoming dry ; this again, drying almost immediately, receives a coat of enamelled paint, which completes the whole process. The glass may be instantly removed from the silvering table, wiped with a cloth, and put in its frame for imme-

diate use. There is no fear of quicksilver producing frostiness, from having only half set, or of finger-marks so frequently descried on the sides of otherwise beautiful specimens of silvering; no fear of scratches, or portions of the film loosening or shrinking; no fear of oxidation setting in, giving the appearance of reflecting a room full of smoke; no fear of the many ills which amalgam is heir to; the glass once silvered, varnished, and painted, might be used as a hand-glass for years without any other protection, and without the slightest diminution of its reflecting power.

If, however, through unfair usage or accident any portion of the silver were to become removed, the damaged part could be re-silvered by the process we have just described without leaving the slightest evidence of any injury having been received. This is not so in the case of the old process, as the only means by which a "reparation" can be effected is an entire re-silvering of the whole glass.

In order to illustrate the marvellous rapidity with which a glass could be silvered, Mr. Pratt caused two glasses of the average size of toilet-glasses to be silvered in our presence. The plates were laid upon the silvering table, and having received a coating of mordant solution, the nitrate of silver was poured on and allowed to remain for three minutes; the glass was then wiped with the "squeegee," dried, varnished, and painted, the entire process from first to last occupying less than ten minutes. The usual time allowed is a quarter of an hour; this is because a large number of glasses are being attended to at the same time, and there being no necessity for such undue rapidity in the ordinary run of business, the illustration was merely to show what could be done. As a further and perhaps more satisfactory comparison between the two systems, it may be said that, whereas the two large looking-glasses, 15 ft. by 10 ft., which attracted such notice at the great Exhibition of 1851, took eighteen men twelve days to silver by the old process, Mr. Pratt performed the operation of silvering by the mode above described upon two plates of the same size with six men in three days, the proportion of time being as one to twelve in favour of the new process; and not only was the work of a far superior character, but, as a natural consequence, considerably cheaper.

It is perfectly manifest that as the time occupied is about one-twelfth of that required by the old process, there is a considerable reduction in the cost of labour; and as regards material, when it is borne in mind that the manufacture of tinfoil is a far from cheap process, the cost even in this respect will compare favourably with

the old amalgam. If, however, the sheet of glass to be silvered should happen to be of so unusual a size as 15 ft. by 10 ft., a special table is provided, by the use of which the risk of breakage is reduced to a minimum. It is constructed in such a manner that its length revolves upon an axis, consequently the large sheet of glass can be placed perpendicularly against the table top, when turned at right angles to its normal position by means of the axis; it is then returned to its proper horizontal position, not having run the smallest risk of injury, and the operation of silvering proceeds as described.

Again, it is not silver only which can thus be transferred to glass, automatically so to speak, but by a similar process gold can be made to deposit a coating upon the glass, by using a solution of the hydrochloride.

The operation, however, differs slightly from that in which silver is used. The glass is first cleaned in the usual way on both sides, and coated with a mordant, after which a solution of hydrochloride of gold is placed in a shallow trough, and the glass turned over so as just to touch the liquid, with the side on which the mordant has been placed downwards; thus, to use an Irishism, the gold precipitates upwards, the operation being similar to floating a sheet of albumenized paper upon a nitrate of silver bath. The time that the hydrochlorate takes to deposit itself upon the glass is somewhat longer than that occupied by the silver, but the precipitation is sufficiently complete to obviate the necessity for a second coating. It is very rarely, if ever, that the body of a looking-glass is required to be of a golden hue, and therefore, on being taken off the solution, the portion required to be silvered, now of course covered with a film of gold, is cleaned off, and the remaining portion is fixed with varnish and paint, after which the glass is ready to undergo the operation of silvering as before described.

It will be remembered that we explained in our previous article the necessity for weighting the glass very heavily after the quicksilver had been made to adhere thereto, and although this is troublesome when the flattest plate-glass is used, it becomes much more so when the surface of the glass to be silvered is uneven, particularly in the case of "cut" glass. In this case a very correct mould has to be made to fit exactly, so that every particle of the surface to be silvered may receive an equal pressure. Were this surface to be highly embossed, or etched with fluoric or other acid, the effect in silvering would be very poor by the old method, for want of an exactly fitting mould; but as by the process of precipitating no

pressure whatever is required, the effects produced are much more varied as well as elegant.

There are many methods of delineation upon glass: there is the old method of cutting it with a rapidly-revolving wheel, the effect being varied by either or both sides being thus cut; there is the method of eating it out by acids, different acids leaving differently-formed surfaces or shades, and which by combination are enabled to produce a great variety of effects. Of course these again can be produced upon either or both sides of the glass, and, further, can be combined with the wheel-cutting operations, so that there is literally scarcely any limit to the effects which may be produced by "ringing the changes" upon the cutting and dissolving processes. All these variations may be used by the new process of silvering and gilding upon glass by the means of pure metal, and this of itself is a vast stride in the manufacture of mirrors.

The absence of the deleterious operation of mercury, too, is a great advantage; the subtle effects of that metal, and the terrible results due to the most homœopathic doses are too well known to need any remarks upon the subject in these columns; nor is it necessary to point out the results accruing to the system of those who are handling, breathing, and living in the midst of the poison during one-half of their existence.

BEAUTY AND UTILITY.— Do not let us suppose that when we speak of this association of beauty with convenience, we speak either of a matter which is light and fanciful, or of one which may be left to take care of itself. Beauty is not an accident of things. It pertains to their essence; it pervades the wide range of creation, and whenever it is impaired or banished, we have in this fact a proof of the moral disorder which pervades the world. Reject, therefore, the false philosophy of those who will ask, "What does it matter, provided a thing be useful, whether it be beautiful or not?" and say in reply, we will take our lesson from Almighty God, who in His works hath shown us, and in His Word, also, hath told us, that "He hath made everything,"—not one thing, or another thing, but everything—"beautiful in his time."—*Gladstone.*

A ROOM hung with pictures is a room hung with thoughts.—*Sir Joshua Reynolds.*

COMPOSITION ORNAMENTS.

THE ornaments with which gold frames are mounted are of comparatively recent date, as they first came into use about a century ago for figures on chimney pieces, and afterwards for picture frames. They are made from a mixture, for which the following receipt will be found to answer well: any quantity can be made in the following proportions:—

Receipt for Composition.

Boil seven pounds of the best glue in seven half-pints of water; melt three pounds of white resin in three pints of raw linseed oil. When the ingredients are well boiled, put them into a large vessel and simmer them for half an hour, stirring it, and taking care it does not boil over. When this is done, pour the mixture into a large quantity of whitening, (previously sifted and rolled very fine), and mix it to the consistence of dough, and it is ready for moulding into the required shapes. The above compo will keep for a long time in a damp place, or in a barrel of whitening.

Compo, when cold, is very hard, and is softened by means of steam, when it assumes the consistency of dough.

The ornaments are made by pressing the compo into *moulds* The moulds are made of boxwood, and the required ornament

is counter-sunk in the wood by a man who is by trade a mould cutter.

Composition ornaments are got out in the following manner: The workman takes the *mould* and well brushes into it oil and turpentine, to prevent the composition adhering to it. When composition enough, in a warm soft condition, is rolled up in the hands into a convenient form to go into the mould, it is pressed into every part very carefully by the fingers, and then a board or flat surface of iron is wetted and placed on the compo remaining outside the mould, and the whole is put into an iron screw press, and the pressure, which is but for a few moments, drives the compo into all the deep parts of the mould and makes the board adhere to the back of the composition. When it is taken out of the press, the mould is removed from the ornament. After the compo has hardened a little, the ornament is cut off, and the remaining compo sliced off to be again heated and used. The ornament, when first cut off, is very soft and pliable, and can be then fitted to frames having beads, hollows, &c., without fear of breaking. These ornaments are fixed on with glue, and if corners to a frame, are sometimes supported with pieces of compo behind to secure them in the position required. When dry, they are quite hard and brittle, and are then to be *backed up*, that is, the spaces between the corner and the frame filled up with compo softened in hot water, which will make the ornament strong, and thicker than before. The mounting of these ornaments oftentimes requires skill and practice, as they have to be placed on a large proportion of the gilded articles sold in the trade. Some of the ornaments when made require supporting in other ways, beside that mentioned, as in the case of distinct fronds of ferns a wire has to be placed throughout the back of the ornament, and secured by covering or backing up with compo, when it is found

this beautiful but fragile pattern will wear well. Brackets, cornices, frames, whatnots, &c., each require the ornaments mounted so as to be graceful and suitable to the design.

The carver and gilder has a stock of moulds to suit the various descriptions of work. We have before remarked, the moulding manufacturer has facilitated the work of the carver and gilder, as the mouldings come to hand ready mounted with composition ornaments, so that in many instances the picture frame, when made, only requires suitable compo corners. Where looking-glass frames are made, they are mounted with handsome scrolls, &c., except where the pattern required is heavy and unsuitable for compo work, when, as mentioned before, the scroll pattern is carved out of soft wood and whitened up.

On very large frames the ornaments are sometimes *papier machie*, which is much lighter. These ornaments are made out of paper pulp, which is pressed between two moulds, and the ornament, when pressed, comes out thin and hollow. One advantage of these ornaments is that, if let fall, they are not so liable to break as compo. They are not held in favourable estimation by the gilder, as the paper pulp does not form such a good foundation for gilding as wood or composition.

The House of Lords and many of the best public places in the metropolis are decorated with papier machie ornaments.

We will now say a few words on carving; it is not our intention to go into the details of this art, as it is not practised in the department of the business this little work is designed to represent.

The ancient and classic cities of old attest by their ruins the antiquity of the art of carving. Capitals, columns, vases, and friezes show, as the poet Cowper wrote, that they did

"Not forget the carving and the gilding."

And not in stone only, but in wood they excelled, for figures

of gods, heroes, and emperors, were cut most artistically: examples have come down to us in greater variety in stone owing to the more durable nature of the material.

From early times this art has been in requisition to represent incidents, fruit, flowers, &c.; and many of our mansions, manor houses, and choirs of ancient cathedrals show the beauty and extent to which the art has been carried. Gibbons, an English carver in the reigns of Charles the Second and James the Second, executed some beautiful work, which may be seen in Windsor Castle.

Before the art of composition-ornament making was discovered the glorious paintings of the old masters were mounted in carved frames, and from this source alone the old carvers derived a good income. These frames are now imitated by composition ornaments. Frames made of broad deep mouldings, on which were carved leaves, bold ornaments and scrolls, were popular at a later period. Many very large frames are still carved, and bold light patterns are appreciated. The carver must be a man of taste, as he has often to do his best to imitate nature in flowers, foliage, and fruit. Unlike the carpenter or joiner, who works by rule, the carver must design as well as execute.

Soft wood is employed when the carved work is meant to be gilt, and wood of a harder description when it is meant to bear a polish and show the beauty of the grain. The soft wood is cut out of different thicknesses of planks, and in case of a deep pattern, a piece of wood is glued on. This plan has been found to answer well where the ornaments are gilded.

Scrolls, sweeps, fruit, flowers, &c., often decorate the centre and sides of a chimney glass, and when the design is made, the carver places it on the plank, and draws the outline, and also the holes which may be required in the pattern, and the whole is then cut out by a bow saw. The ornament thus cut out in

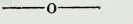
the rough is secured to to bench, and the details worked out by gouges of various sizes and shapes. Although the ornamental scrolls and sweeps appear to be in one piece, yet oftentimes they are in several pieces. They are also generally chamfered after the details of the front have been put in, which gives the design lightness and elegance.

When a picture frame requires carving, it is generally made up first in the required wood, and afterwards carved the pattern decided on.

Much tact is necessary in using the tools of the carver, especially the gouges, as many sorts of wood would split if cut the wrong way of the grain. The use of the carver's tools can only be attained by practice.

The carver who supplies the cabinet maker with work for cheffioneers, chairs, &c., does not generally supply carved ornaments for looking-glasses, &c., which is almost a distinct branch of itself. These ornaments are roughly cut, and afterwards covered with whitening.

PERCEPTION OF THE BEAUTIFUL MUST BE CULTIVATED.—Now no man receives the true culture of a man in whom the sensibility to the beautiful is not cherished; and I know of no condition in life from which it should be excluded. Of all luxuries this is cheapest and the most at hand; and it seems to me to be the most important to those conditions where coarse labour tends to give a grossness to the mind. From the diffusion of the sense of beauty in ancient Greece, and of the taste for music in modern Germany, we learn that the people at large may partake of refined gratifications which have hitherto been thought to be necessarily restricted to a few.—*Channing.*



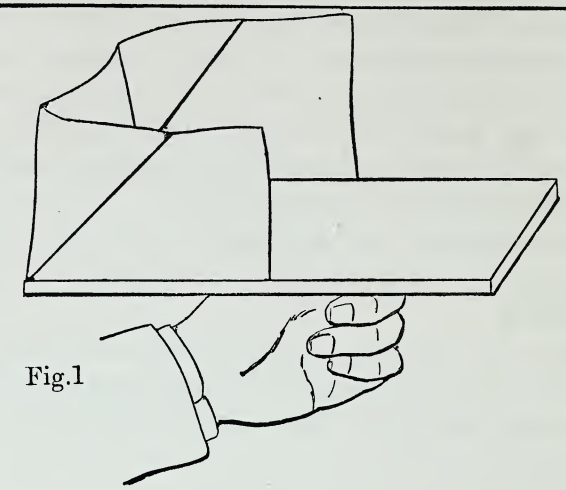


Fig.1

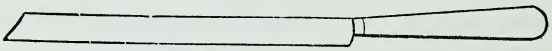


Fig.2

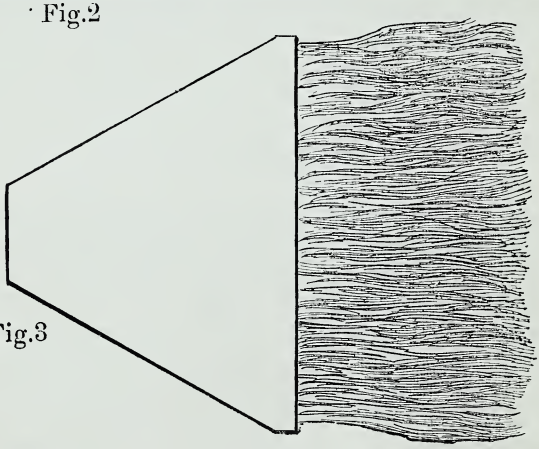
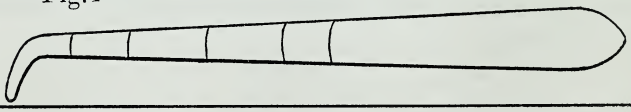


Fig.3

Fig.4



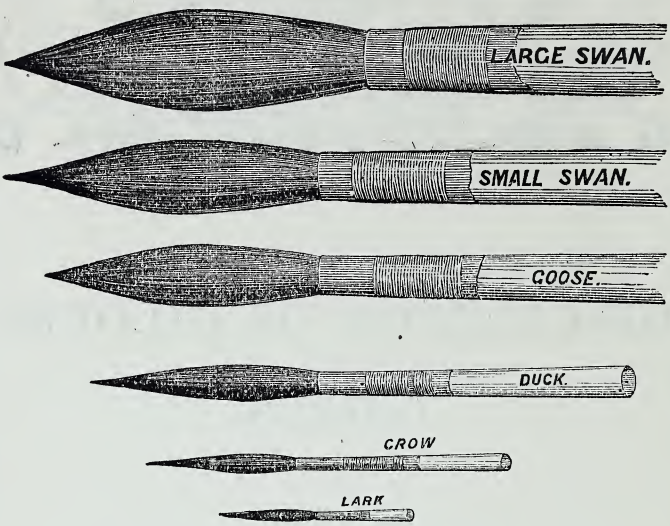
GILDERS' TOOLS.

DESCRIPTION OF GILDERS' TOOLS.

THE tools used by the gilder are few, and not very costly. A short description of each may be acceptable.

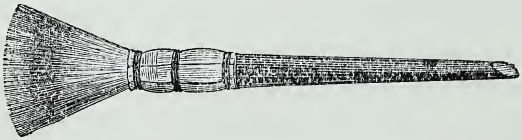
The *gilder's cushion* is used to carry the gold, and on which to cut it up for use. It is a piece of wood about 8 inches by 5, covered with calves' skin, with a piece of soft fabric introduced between the wood and the leather. The leather is strained tightly over the board, and nailed on to the edge. A piece of parchment about three or four inches broad is nailed half way round the board, and is meant to keep the gold leaf from flying off, as the least disturbance of the atmosphere is enough to send the gold leaf flying. A loop is placed under the cushion, in which the thumb is inserted, and serves to carry the cushion. See Fig. 1.

The *gilder's knife* is a light flexible blade, with a smooth edge, but not very sharp, used to cut the gold on the cushion to the required shape. It must be kept clean, smooth on the edge, and bright, or it will tear instead of cut the gold. See Fig. 2.

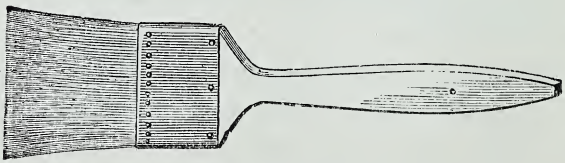


Sizes and Names of Sables, &c.

Gilder's Mop.

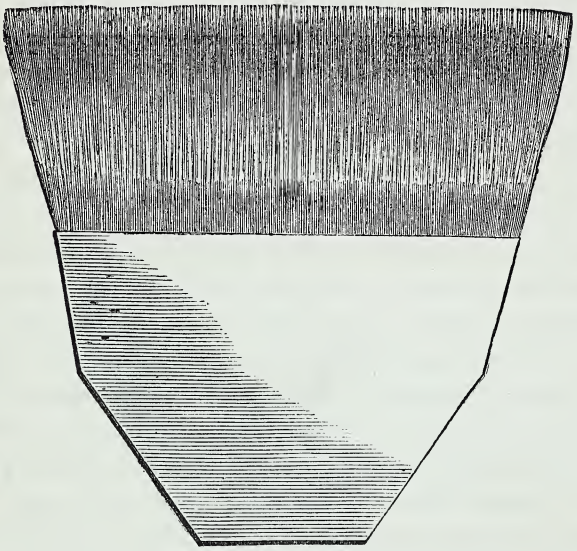


Badger.



Varnish Brush.

The *gilder's "tip"* is a thin layer of flexible hair held together between two pieces of cardboard, and made of various widths, and the length of hair varies also. The tip is used to convey



Large Tip.

the gold from the cushion to the work required to be gilded. The manner of using the cushion, the knife, and the tip, is as follows:—The gilder first proceeds to open the book of gold leaf, and dexterously blows a leaf from the book into the cushion till he has about a dozen ready for use. He then takes up the cushion, and slips his left hand thumb through the loop underneath; then with the end of the knife he carefully takes up a leaf of gold, and dexterously brings the metal to the front of the cushion, when with a slight puff of wind from his mouth on to the centre of the leaf, it is made to lie perfectly flat. He then, with the knife, cuts it to the required shape, and places the knife between the fingers of the hand carrying the cushion.

The tip (which is also carried between the fingers of the left hand) with the right hand is then drawn quickly across the hair, which gives it a little moisture, and on being placed on the gold required to be lifted, carries it to the work to be gilded. This operation is repeated till the work is complete.

The *burnisher* is a tool used by the gilder, and is made of either agate or flint. For beads and hollows, the burnishers are of different form and size to suit the work, and are usually curved near the end. The method of using the burnisher can only be attained by practice, when the sound and smooth passage of the burnisher over the gold will tell the workman if he has been successful in obtaining a good burnish. See Fig. 4.

Brushes of various descriptions are in constant use by the gilder: ground hog's hair flat and round—these are used for the various preparations of gold size; skewing brushes in quill are used for skewing in the gold after it has adhered to the oil gold size; gilder's mops in quill are used to dab the gold to make it closely adhere to the size; badger and camel's hair brushes of all sizes are useful, as well as sable and other tools.

Modellers, both steel and wood, are used to fashion ornaments that are broken and lost. Also in backing up corners and ornaments.

The gilder also uses pumice stones of various shapes, glass paper, pallet knives, &c.

TURPENTINE.—Venice turpentine is obtained from the larch, and it is said to be contained in peculiar sacs in the upper part of the stem, and to be obtained by puncturing them. It is a ropy liquid, colourless or brownish green, having a somewhat unpleasant odour and bitter taste. Oil of turpentine is the most plentiful and useful of oils. It is obtained in America from a species of pine very plentiful in the Carolinas, Georgia, and Alabama. The tree is known as the long-leaved pine *(pinus Australis)*, and is found where the original forest has not been removed.

PREPARATIONS USED IN GILDING.

WE shall now describe the various preparations used by the gilder, and will mention the importance of having clean pots and brushes, and of being particular to keep all preparations from dust and dirt. This is necessary if the amateur or tyro wishes to accomplish beautiful and brilliant work. We shall be anxious to give a full description of how the work is to be performed, and will give the best practical receipts known to the trade, and in so doing the experience of nearly half a century will aid us in the task. The first preparation we shall mention is—

Parchment Size.—The size used by gilders in England is made from parchment cuttings, or cuttings from gloves. In America there is a white glue in use, which is not so fine or suitable for the work. Parchment size is made by first washing as many cuttings as you have room for in a clean stone pipkin; cover them with water, and let them simmer for two hours, when, to test if it is strong enough, the inside of the palm of the hand should be slightly wetted with the size, and the other hand pressed closely several times upon it; if it be found to be *sticky*, the size may be poured off into a clean basin to

cool for use. This size is most important to the gilder, as he uses it to mix nearly all his preparations in the practice of his art. When it is cool it is like a jelly, and the stronger the size the firmer it will be. The bottom and top of the basin of size will be found not so pure or transparent as the middle, and the gilder is always particular to mix his *burnish* and *matt* with the finest and clearest size, while the tops and bottoms go to mix whitening, stopping, thick white, &c. There are two or three qualities of parchment, and only the cuttings of fine parchment will make the best size. If the size is too thick, it will be necessary to add water in making up some of the preparations.

Hitherto experience has decided the strength of burnish gold size, so that when the burnisher is applied it will not friz up; and even the man of experience is somewhat puzzled when he wishes to get on with his work and has hot size to make up his preparations.

A few little experiments have been tried for the benefit of the tyro, with a view to determine, as near as can be, the strength required for a good burnish, without leaving it to an uncertainty.

There is a little instrument used to test milk called a *Lactometer*, and is a *float* which records the density of milk. The tube is marked "M., 1, 2, 3, W.," and if the milk is pure the float will register M. on the surface of the liquid, and 1 if a quarter water is added, 2 if one half, 3 if three quarters, and W. if pure water.

By this little instrument the density and strength of size may be known exactly, without leaving any doubt on the matter; and as a standard to regulate the strength required, a good burnish will be the result of size where the float registers a little higher than 1. Matt should be stronger, and the float would register nearer the 2.

If the size is wanted weaker, the float will sink nearer to the W.; if stronger, nearer the M.

This instrument and deep glass in which to put the milk or size may be had of chemists for about two shillings and sixpence.

Oil Gold Size.—This size is a mixture of boiled linseed oil and ochre, well ground up together. The carver and gilder seldom, if ever, makes this size for use, as it can be purchased cheaply by weight. It is too solid for use as kept in stock, and is thinned down with boiled linseed and fat oil to about the consistency of cream.

Matt Gold Size.—This also is purchased of artists' colourmen by weight. It is of a chocolate colour, and very stiff. When it is required for use, a small portion of parchment size is put into a stone pot; when the size is melted a small portion of the matt gold size is added, and stirred till it is dissolved; more is added till it is of the consistency of thick cream. This preparation is obliged to be used warm, as the size with which it is mixed would coagulate.

Burnish Gold Size.—Like the preceeding, this is usually bought of the artists' colourman, and is mixed like the above. It does not pay to make this article, but the following ingredients ground together very finely would bring out a good burnish:—Black lead, deer suet, and red chalk, one ounce each, with one pound of pipe clay, ground together to a stiff paste. This size is made ready for use like matt.

Clay.—This preparation is usually bought of the artists' colourman, and is mixed the same as burnish size.

Gilder's Ormolu.—This preparation is mixed with medium parchment size, to give the oil and matt gilding a deeper and richer appearance. To medium strength parchment size add enough of the following receipt to colour it. It is better strained before putting into the size. Mix together

¼ pint of spirits of wine,
½ oz. of garnet shellac,
1 dram red Saunders' wood,
½ dram turmeric.

Stopping.—This is a mixture of size and whitening to the consistency of putty. It is used for stopping up holes, or making up defects in the work.

Thick White.—This is a mixture of whitening and parchment size to the consistency of cream, and is put on the parts to be burnished previous to the burnish size.

Gold Leaf.—It may be interesting to know a little of the properties and manufacture of gold leaf; and as the gilder will be most probably questioned by many wishing for information concerning the material he so beautifully lays on and burnishes; we give the following facts for the benefit of the intelligent workman. The gold leaf laid on by the gilder contains about 1-80th of its weight of an alloy of silver and copper, and is melted into ingots of six or eight inches in length. The ingot is passed between solid steel rollers until it is reduced to the thickness of a ribbon. This ribbon is then cut up into small square pieces, which are hammered on an anvil until each piece becomes one inch square, and about 1-760th of an inch thick, weighing about six grains. One hundred and fifty of these small squares are then interleaved between pieces of vellum about four inches square, and a parchment envelope being folded round them, are beaten with a heavy hammer until each piece is expanded to nearly the size of the vellum. They are then taken out, and each piece is cut into four; and the six hundred pieces thus resulting are interleaved with sheets of gold beater's skin, and again beaten till they are quadrupled in size. By dividing each sheet again into four, 2,400 leaves of gold are produced, each of which is about one fourth the size of

the skins. These 2,400 are divided into three parcels of 800 each,—again interleaved with gold beater's skin,—and again beaten till they nearly reach the size of four inches square. The required degree of thickness is now attained, and the leaves are cut to about three and a quarter inches square, and laid in books of twenty-five leaves to each book. Now, by calculating the thickness of the ribbon of gold, as it passes into the hands of the gold beater, and the subsequent division which it undergoes, and allowing for waste, it is proved that the leaves are not more than 1-280,000th of an inch in thickness; in France, where the process of beating is carried still further, the thickness is said to be not so much as 1-400,000 of an inch. An alloy of silver and copper is added to assist the gold beater in his work, as it makes the metal more malleable. Pure gold would crack. The chests of treasure taken after the success of the British arms in the Punjaub were found to contain gold pieces, the greater part of which were cracked in the process of stamping, the metal being too pure to stand the blow.

By the weight and measure of the best wrought gold leaf it is found that one grain is made to cover 56¾ square inches; and from the specific gravity of the metal, together with this admeasurement, it follows that the leaf itself is 1-282,000th part of an inch thick. The size of the English gold leaf is 3¼ inches square, and foreign gold leaf is considerably smaller. The *deep* colour gold is preferred for gilding in general, and green gold, being much lighter, is used for special purposes.

Whitening.—The whitening used by the trade is usually bought by the cwt. in barrels, and is a very superior article to that used in the household, as there is no grit in it, and the gilder is particular to protect the whitening barrel from dust. Before being used for the various preparations, it is rolled out on a board with a rolling pin until it is perfectly smooth and fine.

Whitening up.—Nearly all the work undertaken by the gilder, especially that of picture and looking-glass frames, requires to have a foundation of whitening and size: the reason is that it can be got up very much smoother; and a brilliant burnish can only be produced on a good foundation of whitening. For outside work paint is used as a foundation, and the gilding is invariably done in oil, as no other gilding would stand the weather. It is therefore important that whitening-up various mouldings and articles should be practised by the learner. It has been previously noticed that all the stock mouldings kept by the gilder comes to hand ready whitened-up from the manufactory, and there they have a ready method of whitening-up with templets, which renders the mouldings cheaper. The gilder has oftentimes frames to make to pattern, when he has to get the moulding made, and then whiten it up.

The first thing to be done is to give the moulding a priming of *thin white*, composed of parchment size and whitening, and laid on *very hot*. After this is dry, the irregularities and defects of the moulding is filled up with *stopping*, and then *thick white* is evenly laid on with a brush. As before observed, the *thick white* is made by increasing the quantity of whitening to a given amount of size till it is about the consistency of thick cream. When several coats of *thick white* has been laid on, each one being dry before the next is applied, *pumice stone* of various shapes is applied to the beads, hollows, flats, &c., giving the work a coat of white at the same time, and well rubbing down all the rough projections in the moulding, and also taking care to square up all the angles in the various members of the moulding. In smoothing it out, superfluous whitening will be rubbed out by the pumice stone, which must be taken off.

After repeated drawing up, it is smoothed off with clean water and pumice stone. The thickness of whitening on the

wood should be 1-16th of an inch, and in some instances thicker. Care should be taken not to use the whitening and size when it is beginning to "turn off," as it then loses a great part of its adhesive quality. Different strengths must also be guarded against, as a strong coat of whitening and size laid on a weak foundation will be likely to peel up when the after preparations are laid on.

TASTE, if it mean anything but a paltry connoisseurship, must mean a general susceptibility to truth and nobleness; a sense to discern, and a heart to love and reverence, all beauty, order, goodness, wheresoever and in whatsoever forms and accomplishments they are to be seen. This surely implies, as its chief condition, not any given external rank or situation, but a finely gifted mind, purified into harmony with itself, into keenness and justice of vision; above all, kindled into love and generous admiration.—*Carlyle.*

TASTE is common to all mankind; it is an intuitive, simple faculty instantaneous in its operation, an inward consciousness of pleasure or pain, identical or simultaneous with the perception of the external object. Like all other inborn faculties, it has many differences of degree, and is more or less capable of cultivation according to the temparament or mental capabilities of its possessor. Objective taste is the mere recognition of the beautiful, the mere rudimentary perception of the agreeable or the disagreeable. Subjective taste, which has to do with artistic judgment, is the power of recognising and appreciating the beautiful in, and for, itself, and requires for its complete development a natural sensibility, a many-sided observation of nature and art, a certain social experience, and a habit of analysing and comparing impressions, producing in their combination an intellectual whole absolutely necessary to refine our conception of the beautiful. Let it not for an instant be supposed that taste is a mere matter of indifference; it is an improvable faculty, and consequently one of God's talents committed to our care. Paradox though it may seem, we may be sure that our taste influences our lives and morals, for there is a far stronger link than we are apt to acknowledge between the good and the beautiful. May we never put from us the happy and purifying belief that the power which exalts and refines our ideas of the beautiful, inevitably, though perchance imperceptibly, raises and intensifies our appreciation of the good!

GILDING.

IF there is any knowledge fully in our possession, it is certainly that which comes to us by experience. That a certain material will float in the water, may be proved by a knowledge of its specific gravity; but we feel more fully assured of the fact if we have seen it tried; and our answer to an objector, "I have seen it floating in water frequently," is sufficient to silence opposers. There may be objections raised as to the following methods, but the rules laid down are from practical knowledge, and have been followed thousand of times and produced capital work. We have made these remarks here, as in many works of some pretensions we have seen the processes of gilding described which could only end in disappointment to the learner or experimentalist. It is likely some of the cheap gilding executed in London and other large places may not have the amount of work bestowed upon it as is recommended in the following pages, but our object is to lead those seeking information in a path that will crown their efforts with success.

We have described the work usually undertaken by the carver and gilder, the tools he uses, also the preparations necessary for the work, and the present chapter will be devoted to the description of the work of laying on the preparations and gold.

There are two kinds of gilding practised by the trade; one is called "oil gilding," the other "water gilding"; and the latter is both matt and burnished. Mouldings full of small members, and work full of ornaments, are generally gilt in oil, while broad flat surfaces and plain beads and hollows are gilt in water, and sometimes in oil. Matt and burnish gilding are often seen on the same moulding or piece of work, and can be gilt both in "water" and "oil."

In the chapter on composition ornaments we described the method of getting out, fixing on, and backing up the corners on frames, but have hitherto said nothing on mitreing-up mouldings; this we shall consider shortly; and our first essay at gilding will be on an ornamental frame of broad moulding, mounted with corners, and will be "in oil."

Oil Gilding.

After the corners have been backed up and hardened by being in a dry place, the first care of the gilder is to wash the ornaments on the frame to free them from the oil and dust that may cover them in getting them out of the mould, and on to the frame. Clean water and a brush will accomplish this, but care should be exercised not to use too much friction, as it takes off the sharpness of the ornaments. After this is dry, a coat of *thin white* is evenly laid on the frame. When dry, *stopping* is used to fill up the holes and defects in the mouldings, and also to square up the corners that are damaged, and make good all ornaments that are chipped. When the stopping is hardened, the frame is ready for glass papering, and the back edge, hollows, beads, and flat parts of the frame must be perfectly smoothed with *fine* glass paper. This is important, if good work is required to be turned out. Glass paper for a gilder's use is cut up into pieces about

three inches square, and the sizes most generally used are No. 2, 1½, 1, 0. No very coarse glass paper is required. After well brushing out the frame with the *dusting brush*, it is ready for *clay*, which is mixed as in the foregoing chapter. When this is dry, it is ready for again fine glass papering, and next, a coat of what is technically termed *clear cole*. This is parchment size thinned down with water moderately, and put on warm. The object of thus sizing the work is to keep the next coat, which will be oil, from sinking into the surface. Two coats of this size are usually laid on, and it is much better to lay on two or more coats of weak than one of strong size, as the latter sometimes, if too strong, peels up. Size that has been kept a little too long, and commenced running or spoiling, is known to make first rate *clear cole*. After the size is dry, the frame will be ready for oil, and the workman mixes enough oil gold size to about the consisiency of cream, and strains it through some clean linen rag screwed up tightly, forcing out the oil size. This oil gold size is laid on the frame very thinly and evenly with a brush. The thinner it is laid on the better, but great care must be exercised to touch the whole of the surface of the moulding, and to be most particular to brush in the oil to the bottom of the work. It is usual to put work in oil the last thing at night, so that it may be ready for gilding the first thing in the morning. It is known to be ready for gilding by the oil being *just tackey* and *nearly dry*, and in this state the gold will adhere firmly, and brush off bright; but if the oil has been laid on too thick, or the gold applied when it is too tackey or not dry enough, it will be dull, and greater care must be exercised in *skewing* in the gold, or the more prominent parts will have the gold brushed from the surface.

As before described, the gilder blows the gold out on the cushion, and cuts the leaves of gold up into convenient sized

pieces to suit the various parts of the frame, and takes them up with the *tip*, and lays them on the frame till it is well covered with gold. In a frame gilded in oil the gold is ragged, and in many places of double and treble thickness. The gold is first carefully pressed down with a *dabber*, and then skewed well in with a *badger*. A rather long-haired brush set in quill is used, called a *skewing* brush, to brush out and off the frame all the skewings remaining. After this operation the frame is ready for *finish size*. This is clear size, rather weak, laid on evenly with a hog's hair brush, and if it is thought desirable to deepen the colour of the gold, a little *ormolu* is added in order to give it a deeper and richer colour.

The *skewings*, which are the small particles of gold not required on the frame, are carefully put away and sold to the gold beater when a sufficient quantity has been collected.

The frame will now be complete when the back edge is brushed over with Oxford ochre, mixed with size.

Water and Oil Gilding.

After going through the operation of gilding a frame in oil, which is comparatively simple, the reader will be prepared to gild a more elaborate frame, finished with brilliant burnish on the corners, beads, &c., and a broad *double gilt* flat and hollow on the inside. It may be mentioned here, all the best work that is flat, such as broad insides to picture frames, spandrills, flat looking-glass frames, &c., are double gilt; and this is done to give the work a better colour and more solid appearance. That work of this class is superior there is no doubt, and that it was thought so in the time of Shakespeare may be inferred from the speech of Fabian, in *Twelfth Night*, who says—

"The double gilt of this opportunity you let time wash off."

Some of the gilder's clients may perhaps think he over-charges

a little for his work, but when he is anxious to please his customer with good work, it should be borne in mind both gold and time must be paid for, that have contributed to the result.

We will now describe the operation of gilding a broad frame made of Alhambra moulding, with corners and a broad flat inside. As a general rule the broad flat insides to frames are made separate, and fit into the rabbet of the outside frame when made. This is convenient to the gilder, as he gilds the flat in water separate from the frame.

The first thing the workman is careful to do is to see that the frame is free from dust, dirt, or grease; if not, to wash the frame with a brush and clean water, care being taken not to take off the sharpness of the ornaments in the operation. After it is dry, a coat of *thin white* is then applied, and then all holes, &c., are made good by *stopping*, and the parts to be burnished receive three or four coats of *thick white*. When the last coat of thick white is nearly dry, pass over the parts with the finger, which will help to smooth the rough surfaces. It may, perhaps, puzzle a novice what parts should be burnished in various descriptions of work, but a good rule will be to take the most prominent plain parts of the ornaments and beads; and in the case of scrolls on a chimney glass, the scrolls fixed on for burnishing should be followed throughout with burnish. It requires taste and judgment to so distribute the burnish in any work that it may not be overdone and lose its effect, but judiciously placed, so that the *matted* portions will stand in strong contrast, and produce brilliant work. The frame is then carefully and thoroughly glass-papered till it is smooth, when it receives a coat of *clay*, and is again glass-papered and brushed down. Two coats of size, evenly laid on, follow, taking care that the first coat is thoroughly dry before the

second is laid on. When this is done the frame is "put in oil," in the same way as before mentioned, and afterward all the beads and ornaments which have received the coats of thick white, and selected for burnishing, must be rubbed clean of every particle of oil. This is usually done by wetting a piece of calico, and wringing it out: commence by putting it round the second finger of the right hand, and pass it carefully over the parts to be burnished, changing the surface of the calico on the finger very often. Should any of the other parts of the frame be touched by the damp calico, it will be necessary to again apply the oil brush to remedy the accident, and a small camel's hair brush will sometimes be needed to touch in small imperfections. Although it is thought that every particle of grease has been wiped off, yet it is necessary the next morning, before laying the gold, to go over all the parts required for burnish with *clay*. This is done to prevent the possibility of any gold adhering, as it would have to be glass-papered off before putting on more preparation. The frame is then gilded as before described, and the gold skewed into the bottoms of the ornaments; after which, if there are any faults in the gilding, they can be rectified by taking a small camel's hair brush, and wetting it in the mouth, apply it to the spot, and lay gold enough to cover it. The frame must then be *finish sized* once, as before mentioned.

Water Gilding.

We must now look to the burnishes, left with a coat of *clay*. Matt gold size must be mixed, and three or four coats must be evenly applied with a camel's hair brush. When dry, it should be gone over with very fine glass-paper and brushed down, and afterwards with a damp sponge. On this surface lay two coats of *burnish gold size* as evenly as possible, when it will be ready

for the gold as soon as the last coat is dry. We must now lay the gold in a different manner to that mentioned before, and we will first gild the bead running round the frame between the parts already gilded in oil. The frame must be raised on the left hand, so as to be at an inclination, to allow the surplus water to run off, and we must be provided with a clean glass of water and camel's hair pencils. Proceed to work in the following manner :—

A convenient sized camel's hair pencil that will cover the bead is dipped in the water and scraped over the edge of the glass, and beginning at the left-hand end of the bead, proceed to wet the bead for five or six inches down, and pass the brush over it till it is thoroughly soaked; and while the water is yet floating on the bead, the strip of gold, which is ready on the *tip*, must be laid quickly and evenly.

It may as well be mentioned that with water gilding the gold cushion is held as usual, in the left hand, and the knife and tip are held between the fingers beneath. The workman commences by cutting strips of gold leaf the necessary width, and taking up one on his tip, it is put between the fingers of the left hand till the bead is ready to receive the gold; the brush is placed in the glass; and the tip, ready with gold leaf, is taken from between the fingers, and the gold applied; after which another strip of gold is taken up on the tip, and it is returned to its place between the fingers of the left hand to wait till another piece of the bead is soaked and ready to receive more gold. This operation is continued till the whole of the bead is covered; also the burnish in the corners, &c., must in the same way be covered. It is scarcely necessary to mention that the water must be kept from the gilded portions of the frame as much as possible. In laying a bead, it will be better to have no uneven edges to the gold where it joins, as it will make it more solid, and save

trouble. Should there be a defect in the gold caused by laying on or other causes, it must quickly be made good by applying more gold lightly to the spot.

The whole of the frame is now covered with gold, and the beads and ornaments just laid must remain till they are dry, which will be perhaps two hours, unless the workman is in a warm shop.

Burnishing.

Burnishing out the gold thus laid is the next operation, and is thus performed :—The burnisher, which is usually curved at the end, is grasped in the right hand, and the curved part applied to the work ; with a slight pressure from the thumb of the left hand, which also steadies the tool, the burnisher is rubbed steadily backwards and forwards, when it will be found to bring up a brilliant burnish. Sometimes the burnisher is used at the point to burnish close up to the ornaments, and for hollows, &c., burnishers of various sizes and shapes are used for the work, A little practice will enable the learner to soon find out the best shapes for the work required.

The frame in hand must now be looked carefully over, and if any "faults" occur round the base of any of the burnished ornaments (which is sometimes the case,) it must be made good as before described, and the frame *again finish sized*, care being taken *not to touch the burnished parts with size*, when the work may be said to be finished so far, after the edge has been yellowed with Oxford ochre.

Double Gilt.

The broad inside flat and hollow must now be taken in hand, and as an engraving is to be put into the frame when it is finished, we must burnish the hollow ; but if an oil painting

had been going into the finished frame, the hollow would not have been burnished. We make this a rule, as the burnished hollow next to a painting disturbs the eye, which ought to rest in repose on the picture; but with an engraving with a broad white margin, the burnished hollow gives a more finished appearance to the whole, and the white margin keeps the eye from wandering.

The inside flat and hollow is about one and a half inches wide, and in order to make it look well, it must be carefully prepared up and double gilt in water. Large flat surfaces tax the gilder's skill, so as to make the whole look solid, without an appearance of a join in the gold. Sometimes the mitres require rubbing down with pumice stone and water, if they have not been neatly joined, and any inequalities in the surface, hollow, or edge, must be *stopped*, and when dry rubbed down with rather fine *glass paper*. A coat of *clay* must then be laid on, and it must be again *glass papered*, and four coats of matt gold size smoothly laid on, when it is again glass papered and washed carefully down with a piece of cloth. When this is *nearly* dry, take a piece of dry cloth and briskly rub over the flat, and a polished surface will be the result. On this surface lay two coats of *weak size*, and when dry it is ready for the first layer of gold. As our inside flat is one and a half inches broad, the gold leaf will have to be cut one leaf in two. Proceed as before stated for water gilding, taking care *not* to lay the gold in the hollow. When the gold is laid all round, the work must be hung up until quite dry, which may be three or four hours, according to the temperature of the room. When dry, take a piece of cotton wool (the finest is sold by chemists,) and rub off the superfluous gold, when it is possible a lot of *faults* in the gold will be discovered, and perhaps what is called "spiders' legs" will be seen; but as our work is to have another layer of

gold, this difficulty will be overcome. After the superfluous gold is rubbed off, a coat of *weak size* must be laid on the gold, and when dry two coats of *burnish gold size* in the hollow; the work when dry is ready for the second coat of gold, which must be laid on as before, taking care, on this occasion, to lay the hollow with the flat. When dry, the hollow must be *burnished* with a burnisher, taking care the tool does not slip over the matt, as it will make a scratch that cannot easily be got out. When the matt has received two coats of finish size, the inside may be said to be finished.

The *faults* spoken of will be found to have disappeared with the laying of the second layer of gold, but if there should be a fault it must be seen to *before* the finish size is laid on, or it will show very badly, and spoil what would otherwise be considered good work.

The tyro must remember never to touch his burnishes with size or water, and hence arises the necessity of sometimes being obliged to change the order of the processes to save the burnishes from damage.

The most convenient way of laying matt or burnish gold size on small work is to lay two or three brushfuls on the back of the left hand, when it will be found that the brush can be filled and brought to a fine point very quickly, and the size is kept in a workable condition by the heat of the hand.

White and Gold.

Many centuries before the Christian era the barbaric splendour of Eastern kings was augmented by furniture and articles in daily use in gold and silver. We obtain a sight of one in the book of Esther, who had power and glory, and reigned from India unto Ethiopia, and he was proud to show the powers of Persia and Media "the riches of his glorious kingdom;" and

it is also recorded that "in the courts of the king's garden were couches of gold and silver, on a pavement of coloured marbles, with hangings of white, green, and blue, fastened with cords of purple and fine linen, to silver rings in marble pillars." It will thus be seen that furniture in gold and colour is not a modern introduction, but was used in cities that the tide of war and the desolation of earthquake have levelled with the ground.

In many of the mansions and "stately homes of England" the suites of furniture in gold, gold and white, &c., covered with satin or fine needlework, are very chaste, and show the work of the carver and gilder to its best advantage. Let us pay a short visit to one of these rooms, and glance at the work of the decorator, designer, and gilder. On entering, we notice some of the bold members of the mouldings round the room are gilt, and the centre of the ceiling is in gold and chaste tints, from which depended a brilliant crystal cut-glass chandelier, full of prismatic drops. The mouldings round the panelling in the room are gilt, and the walls are in distemper. Opposite the door, at the end of the room, is a large girandole of magnificent design, with five lights, and decorated with birds and festoons of flowers and fruit; on either side of which stand elegant console tables, with groups in carton pierre ornaments, and the immense glasses ornamented with vine leaves and festoons of grapes. In recesses are brackets with dragon supports, on which are Parian figures supporting vases of wax flowers. Over the three plate-glass windows are elegantly-shaped cornices, with cupid centres and festoons of flowers; between the windows are fixed a pair of wall lights, decorated with game, birds, flowers, and trophies, with lily branches for three lights. In one corner stands a five-tier etagére, with looking-glass shelves and backs, and a boy bracket. Near the entrance to the conservatory is a looking-glass, from floor to ceiling, and jardinière filled with

exotic plants. Over the two fire-places are a pair of immense and elegant chimney.glasses, with birds and flowers for centres, and cornucopias on each side. There are also in the room fire screens, tripod stands for flowers, chairs of various patterns, and ottomans, centre lounges, and a large oval table, with handsome moulded border and pillar decorated by figures on solid plinth. Two or three elegant occasional tables, supported by water-lilies and rushes on a looking-glass base, and a carved screen completed the gilt suite. The effect in a large and lofty room is chaste and beautiful, as the colours in the carpet, contrasted with the elegantly gilded articles, together with the rich tints and patterns of satin and needlework with which the chairs and ottomans were covered.

Work in white and gold requires great care in whitening up and preparing; also taste and judgment to decide what parts of the articles should be white, matt, or gold burnish. Brackets, whatnots, console tables, chairs, lounges, and many other articles of furniture are ordered in this style; and we will here describe the process on a carved chair, when, if the directions are followed with any carved article, the result will be satisfactory.

Chairs are oftentimes delivered into the gilder's hands whitened up, but where this is not done it is necessary to carefully whiten up the article, being particular to draw up the whitening so that every part of the pattern shall be sharp, and stand out well in bold relief, according to the directions before given on whitening up.

As the back and seat of our chair is to be needlework, it will be necessary to see that they both fit in their proper places, so that the gilding may not be damaged when finished.

After glass-papering we must then decide on the parts to be white or gold, when a coat of *clay* must be applied to all the

parts required to be gilt, care being taken not to go over the parts decided on to be white, and the work will proceed in the same way as laid down for water gilding.

When all the gold is laid and burnished out, and the matt *finish sized*, the white parts must receive two or three coats of *flake white* and parchment size, not too thick, care being taken to give a clean finish to the gilding in passing over it with the camel's hair brush.

If the work is ordered to be varnished, it will be necessary to give the white two coats of clear size to prevent the varnish from sinking in, and the chair will be ready to receive a coat of white varnish. With this operation the white will become a cream colour.

Articles are sometimes got up in mauve and other delicate colours, to suite the taste of the purchaser. Where silver leaf is required to be laid, the process will be the same as for gold leaf.

Re-Gilding.

The large variety of articles supplied new by the trade, in the course of time require renovation and re-gilding, but this process differs but little from that of gilding a new article in the white. There are a few things necessary to look to, not generally required in new work, and we will mention them.

If the article required to be re-gilt is the frame of a chimney glass, the back must be carefully taken out, and the wedges holding the glass in its place must be removed, taking care they do not touch or scratch the back of the glass, and the glass taken out. Take off the ornaments on the top and the sides, if they are not compo, in which case they would be fixed to the frame, taking notice how again to secure them in their places. The ornaments are put on with screws from the back of the

frame, or with brads and needle points. Well dust down both frame and ornaments, and be particular to see to the rabbet that no particles of quicksilver remain, as any quicksilver coming in contact with your newly-gilt frame will turn the gold black.

Proceed to wash off all the old gold, and shell up any of the preparation that is not firm; also ornaments that may be loose on the back or sight edge of the frame. A piece of cloth will be found to be the best thing to clean off the old gold, as there is more friction than in sponge, but the sponge will be useful when the gold is removed to carefully go over the frame. If the frame has been varnished or gilt in oil, glass paper must be used till the gold is all removed, when a slight wash over to remove all the remaining particles of dust will be advisable. If in washing the frame you find any of the preparation blister up, you will know it is bad, and the parts blistered must be scraped off down to the wood, and when dry, a coat of *thin* white of medium strength applied. Of course these remarks will be applicable to the ornaments as well as the frame; and in whitening the backs of the ornaments, be particular not to let any run on to the front; if it should do so, see that it is removed before it is dry, or smooth it down.

Glue on to the backs of the ornaments some blocks of wood about an inch high, when they will be found most useful in keeping the work from the bench, and in laying on the preparations. The ornaments and frame are now ready for *stopping*, and making good all deficiencies, either in ornaments or preparation, and when the stopping is dry to glass-paper over, and give another coat of *thin white*. The parts to be burnished should now have three or four coats of *thick white* with a camel's hair brush. The frame will now go on the same as new work before mentioned, until it is finished.

If the work under hand be picture frames where the orna-

ments are broken and lost, they must be made good. Sometimes this can be accomplished by softening compo, and putting it on to the part deficient, and with the *modellers* fashion it out to match the other ornaments. But where the pattern is small and difficult to imitate, the usual method is to take a model as follows :—

To take a Model in Compo.—If it is found necessary to replace broken ornaments on a frame, it is often a saving of time to take a model of the ornament required from a good one still remaining on the frame. Sometimes a strip of running leaf is deficient on the back or sight edge, when a piece long enough for our purpose shells up from the frame. If the ornament is loose from the frame, glue it down on a flat piece of wood, and tack round it, leaving a margin, slips of wood about half an inch high, and with the brush used for oiling the wood moulds, oil the inside and the ornament. Hot the compo, and then with the fingers, well squeeze in enough compo to fill the place. When it is hardened the mould may be removed from the ornament, and a good mould will be found to be the result, from which (when thoroughly hardened,) as many ornaments may be made in the same way as before described for the wood moulds as are wanted. If only part of an ornament is required it is cut to the required size, and either put in or stuck on and backed up, as the case may be.

If the ornament to be moulded is on the frame, it will not oftentimes be found necessary or convenient to have slips of wood to keep the compo from spreading, but if a good lump of compo is used, a mould can be made good enough for the purpose by proceeding as before mentioned. This method will be found to answer to replace ornaments or any article where the compo ornaments require mending or replacing, but where there is no ornament left to mould from, oftentimes moulds

that you have in stock will answer the purpose; if not, suitable ornaments must be ordered from London. If only one or two perfect corners or ornaments remain on the frame, it is better to chip them off and replace the whole with a good pattern in stock.

To Frost a Cardboard Mount in Gold or Silver.

Mounts to be frosted should be made out of stout cardboard, so that the preparations laid on do not cause it to warp.

Give the mount first two coats of thin parchment size, and when dry a good coat of oil gold size. Throw on in sufficient quantity, fine, middle, or coarse emery to well cover the surface, (as you may want the frosting coarse or fine,) and allow the surplus not adhering to the oil to roll off again. Lay the mount flat till the morning, or till the emery is fast on the suface. There should then be a coat of thin white lightly laid on, so as not to disturb the emery, and when it is dry a coat of *clay*, two coats of clear cole, and put in oil, and left till the following morning, when gold or silver leaf may be laid, and finish sized. These mounts are very effective for portraits or other small works of art.

To Gild Oak and other hard Wood.

It is sometimes required to gild the bare wood, so as to show the grain. This may be done to look very well with oak and other hard wood, but with soft wood the grain would rise, and present a very rough appearance.

Well glass-paper down the surface to be gilt, and apply two or three coats of polish with a brush, and when dry, oil gold size. The gold can be laid when this is nearly dry, and will brush off bright.

The above is suitable for the bevels of oak Oxford frames, screens, church decoration, and any hard wood.

To Gild a Cardboard Mount.

Lay on three coats of matt, and carefully wash and rub down with a piece of cloth; weak size, and gild according to instruction in water gilding. The mount to be gilt should be made of stout cardboard.

Gilding on Brass.

The brass ends of cornice poles, ornaments, the ornamental brass off cabinets, and a variety of small articles are sent to the local carver and gilder, and these articles can be done up on the premises without sending them to be re-lacquered, and will look much better and keep colour longer.

First wash the brass ornaments in strong soda and water, well brushing out the bottoms; and when clean and dry, go over them with French polish laid on with a brush. Put the ornaments "in oil" in the usual way and gild, when they will be found to look a good colour, and the gold will not be liable to scratch off. The thin coat of French polish has been found to be a good foundation for the gold, as there is no shelling up. Where the articles are required to bear a brilliant burnish they had better be sent to be re-lacquered.

Gilding on Glass.

Gilding on glass is not usually practised by the carver and gilder, yet it may not be out of place in a work on gilding to describe the process.

We have described oil gilding, and it is not unlike it in its *modus operandi*, but of course the conditions are different. In place of the oil gold size you must mix two ounces of water with the same quantity of spirits of wine, and a small quantity of isinglass or gelatine. Dissolve the isinglass with the water,

which should be boiling, and when nearly cold add the spirits of wine and strain through clean silk.

The method of procedure is to obtain a sheet of paper of medium thickness, the size of the sheet of glass on which you propose to gild, and with Brunswick black, write or draw with a camel's hair pencil what you wish to gild on the glass. This paper should be attached to the glass with gum or wafers at the corners, with the design outside. If it is writing it will be seen through the glass from right to left, and the letters of course reversed. After the glass has been thoroughly cleaned, with a camel's hair pencil write or copy the letters with the mordant as above prepared, care being taken not to take up too much in the pencil at once. If it is a long strip of glass, which it often is, the best position for work is to raise it on one end, on a slopeing board, so that you could begin at the top and work down, the letters being one over the other. Apply the gold with a tip as usual, and if the writing is not large it would be better to lay on the gold throughout the whole line without reference to the shape of the letters. When the letters are put in, begin gilding on the top, and let each leaf of gold just overlap the one laid above. If this particular is not attended to, every seam in the gold will show; if large letters are required, the gold can be cut to the shape necessary.

When all the gold has been laid, it should be left to dry, or placed before a fire, when as it dries it will assume a burnished appearance. It should be then carefully rubbed over with the fine cotton wool, (to be obtained of chemists) to remove the loose pieces not adhering to the glass. At this stage the work will look faulty, and another coat of gold must be given to make it appear solid. To this end, lay on a thin coat of isinglass size with a soft camel's hair brush, and be careful not to go over the same place twice, or the gold will be removed. In

order to enhance the burnish of the gold, the size is sometimes laid on hot, but the workman would prefer for the size to dry and pour on hot water. This last method sometimes cracks the glass, but the hotter the water the brighter the burnish. The second coat of gold is laid on with the same size as the first, and in the same manner. After it is dry the superfluous gold must be removed and a coat of hot size laid on carefully. The gilding will now be brilliant, but not so effective as wished; another coat or two will improve its appearance. The work should now be left for a few days to harden.

At the present stage of the work there is little or no shape to the letters, as the gold has rough edges and letters badly formed. The gold must be written on with Japan black; this will make the letters smooth and shapely. In order to have an outline to work from, take the copy from the back, rub it over with whitening, and lay it face downwards on the gold, and with a stile or pointed piece of wood go over the outline of the letters, and, on removal, it will be found a good outline to work by on the gold. After the lettering has been neatly done and dry, all the gold not covered must be washed off with warm water. If any of the edges should happen to be rough, they can be trimmed, and the tops and bottoms of the letters can be cut up with a straight edge and chisel. The shading can now be put in. The operations described above should have full time to dry, and not follow one another too closely; the risk of the gold coming off is lessened thereby. When the gold has been on the glass for a few months, it is with difficulty that the leaf is washed off the glass at all.

Interior Gilding.

The first decorator we have any historical mention of was a Jew. His name was Bezaliel, the son of Uri; and he "devised

cunning works in gold and silver, in cutting of stones, and in carving of wood." He exercised his craft more than three thousand years ago, but his history is silent on the methods he employed to make him famous as a carver and a worker in gold and silver.

Gilding, as an interior and exterior decoration, was extensively used by the ancients. The Egyptian monuments present numerous traces of the art in Eygpt. The process was nearly the same with that now used. The artists employed a sort of paste, like that now used in gilding wood, even for gilding metals; but they were also acquainted with the art of applying the gold directly to the substance to be gilt. The Persians were also acquainted with this art, as appears from the ruins of Persepolis. The Greeks and Romans employed gilding for many purposes, and the former used to gild the hoofs and horns of animals offered for sacrifice. The practice of gilding statues prevailed in the infancy of the art of sculpture, and was never entirely dropped by the ancients. The Romans used to gild sweetmeats; and many articles of furniture and utensils which have come down to us are gilt. There are also specimens of gilt glass and metals. The gilding which still remains on some ancient bronze monuments is remarkable for its brilliancy. This is owing in part to the great accuracy of the finish, but in part to the thickness of the gold leaf, which was much greater than that of the leaf used by the moderns. Besides, we must consider that, in the most common way of gilding brass with an amalgam of gold and quicksilver, the gold is reduced to a state of much greater sub-division than in the leaf, the only state in which the ancients employed it. The account of Pliny shows that they did not fix the leaf merely by the aid of fire, as is now done in gilding metals, but that they first covered the substance with quicksilver which was then evaporated by heat, in manner

somewhat similar to the modern practice of gilding with amalgam. The ancients carried the art of gilding to a greater extent than the moderns; they gilded almost all their statues of bronze, wood, or plaster, and frequently those of marble, the ceilings of rooms, and even marble columns, eatables, and victims.

We have described the gilder's art as practised in workshops, where the best work in picture and looking-glass frames, console tables, &c., is executed, and will now notice gilding as an interior and exterior decoration. In good rooms it is a matter of study as to the decoration in gilding and painting, so as to produce an affective and pleasing appearance.

The most remarkable examples of gilding, employed with taste and effect in architecture, are the ceilings of St. Peter's and that of Santa Maria Maggiore.

Interior decoration is rather a suggestive art than one whose principles can be brought with scientific rules; but this fact seems to be singularly lost sight of in England by those having the arrangement of the interior of edifices, and the consequence is, the prevalence of a tasteless monotony, at once unnatural in theory, and in the highest degree offensive to true taste in practice. Where but in England, we ask, can be found at the present time, such a little knowledge of the effects of ornament in different situations? In continental countries and eastern nations we perceive this to be the primary consideration of the decorator, who, for that reason so arranges his materials as to overcome natural defects and heighten natural beauties by the power of contrast. In England, however, the case is different; ornament is *stuck* upon walls because it is ornament, and for no other earthly reason. It matters but little to the decorator whether the peculiar construction of the apartment will assist or destroy its beauties, and the consequence is, nine cases out

ten, the result turns out an abortion. On entering an English apartment, even in the middle of dog days, you sometimes feel a most unaccountable chill, a peculiar sensation, that gives no idea of its cause, and you do not perhaps discover it until, on looking round several times, you find that you are in an apartment having a northerly aspect, and *decorated* with stone-coloured ornaments. In the same way we often see a room facing the east, bedizened and blazoned with gilding or yellow paint, which, reflecting the rays of the sun, produce a most insupportable heat.

The French people have long been noted for a lavish display of gilding, says the *Trade Bureau*, using it as they do on every occasion as a part of the decoration of walls and ceilings, picture and mirror frames, and articles of furniture, going so far even in some instances as to have the entire frame of solid gilt. Contrary to the usual custom of imitating French styles, the Americans have been cautious in adopting this particular style of gilding. The idea prevailed at first that gilding was cheap and gaudy, and it was used quite extensively in adorning public buildings and public vehicles, it was a long time before it was applied to private uses.

Without doubt, a judicious use of gold in decoration contributes vastly towards beautifying a dwelling, while a profuse display of it has a tendency to impart the gaudy appearance often noticed in steamboat and similar decorations. Dutch metal, however, was frequently substituted for the genuine article, and as the former soon tarnishes and becomes dull and dirty-looking, an unfavourable impression was created as regards the use of pure bright gold. The introduction of gilded work into fashionable society was only accomplished after long and repeated efforts, but finally it became fashionable, and then the opposite extreme of profusion was entered upon. Everything

was gilded, and gilded heavily, until it was discovered that such a course was not consistent with economy, and as retrenchment could not be made very well in the use of the metal, it was sought to effect the purpose by slighting the work of laying it, but the public would not submit to this studied carelessness and bungling, and, as a consequence, gilding came very near receiving a finishing blow. Happily, however, a wise moderation was advocated just in time to save it from utter disuse, so that at the present day we again find a favourable reception for gilded work.

Solid gilt work is used to some extent on expensive suites, which gives them a rich appearance, especially if the coverings be of black satin. Gilt chairs and tables, and jardinières in ebony, elaborately decorated in gold, are indispensable articles of ornament in many households. Although gilt picture and mirror frames are not so abundant now as they once were, yet a sufficient quantity of gilt is used on the ebony, walnut, or waxed walnut frames which supply their place. At one time bedroom suites were finished in this semi-gilt style, but they had a short season on account of the wax-finish spotting easily when coming in contact with water, and the oil-finish with or without coming in contact with it. Black mouldings were then adopted and are still in use.

On cabinets gilding is deemed a necessity, the quantity being determined by the richness and cost of the cabinet. Usually the more elaborate the cabinet the less heavy are the lines, unless the mouldings and engravings are of such a character as to require heavy lines. It is generally considered in good taste to have the tracings as light as possible.

In interior decorations gilt forms an important feature, and the plainest houses have beadings and mouldings. Gilt is used, too, in the fresco of wall-paper, and carpets are made to simulate

a gold colour as nearly as possible. Fine enamelled suites almost always have a stripe cut into one of the shades, and this seems to be the only ornament that can be used appropriately on black or white suites, although sometimes a pretty effect is had by the addition of bunches of flowers on black suites. A well-finished black suite with elaborate scrollings and lines of gold, with not too much bright colour, makes a suite equally rich as walnut, and it is preferred by many. It does not have the sombre look many would attribute to it, this being dispelled by the bright ornaments, and, when properly finished, it will retain its fresh appearance longer than any other colour.

White suites trimmed in a similar manner as that described for the black suites are in limited request, and would doubtless be in greater demand if it were possible to obtain a good white ground that would remain fast. The varnish, however, turns the white a little at the start, and with age it assumes a yellow hue. A mixture of a little Prussian blue in the last coat of varnish will assist the white ground to retain its colour, but nothing has yet been found to preserve a pure white for a very long time.

For interior decoration the painter executes his work first, and afterwards the gilder proceeds to glass-paper down with very fine glass-paper the parts required, till it is quite smooth, when, after using the dusting brush, they are put in oil on the painted surface in the evening, and the next morning the gold can be laid, pressed down with cotton wool, and afterwards brushed off. Faulting and finish sizing will now complete the work. The same method must be pursued as before mentioned for oil gilding; the difference being that the foundation is paint instead of whitening, and does not need sizing.

If the work is required to be *burnished*, the paint must be scraped off down to the wood, and must then be prepared up

with whitening, and proceed as before mentioned for burnished gilding. Where mouldings are required to be burnished in room decoration, they are generally gilded in the workshop and afterwards put up.

When the work is *flatted*, the parts to be gilded should have two coats of size to make the gold size bear out.

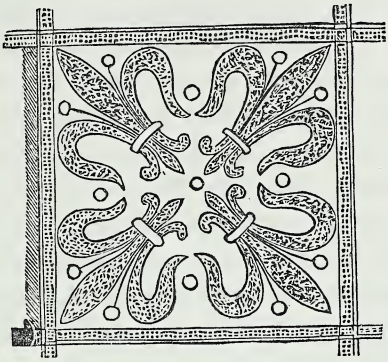
Any pattern required to be repeated can be quickly put in oil by *stencilling*.

The art of stencilling is easily acquired, and may be practised by the amateur as well as the professional decorator. It consists of a plate of copper, brass, zinc, or tin, perforated with an ornamental design or words, laid on a panel, or place required to be decorated, and with a short circular movement of a brush with a flat end, the colours are laid through the perforation in the plates, and the pattern is quickly and easily made in oil or distemper colour. This art is perhaps practised to a much greater extent than is thought possible, as it is applicable and is used for a lady's cambric handkerchief in stencilling a monogram in marking ink, as well as the bold decorations found in concert and other public rooms. Its advantages are great, as a well executed design or lettering can be accomplished and successfully repeated in much less time than it could be done by a most experienced and expeditious decorator. Thus the pattern of the following ornament could be quickly put in by stencilling, by having one corner only cut out, when by repeating it four times it would complete the design.

It is also an occupation in which ladies would excel, not only in the execution of the work, but in drawing the designs. The parish church of Folkstone has stencilled decorations, and was almost entirely executed by the fair sex.

Stencil Plates.—Before proceeding with a technical description of this art, it will be necessary to say a few words on

stencil plates, and how they may be executed by a careful manipulator. The perforations in the stencil plates, forming the pattern, are not continuous, but portions of the metal are



left in the pattern to keep the pattern perfect. Thus, if it is required to cut a stencil plate with the letter O, a portion of the top and bottom of the letter must remain uncut in the plate, or the centre of the letter would drop out and spoil the design, and in all stencil patterns this must be observed in designing patterns for use in stencil plates. This can be noticed in any little town or village, by noticing the starch and other boxes that are covered with lettering by the aid of metal stencil plates.

These plates are made either by cutting out the perforations with a graver, or by etching with acid. Both these methods are successfully used together, as by etching with acid the edges are left rough, and the angles anything but sharp, while the graver leaves smooth edges, which is important.

The *modus operandi* is simple. Select a piece of metal a suitable size for your designs, and remember a large plate should be very slightly thicker than a small one. Heat the plate over a spirit lamp, and well rub over the surface with an heel ball, when the pattern can be easily drawn with a blunt

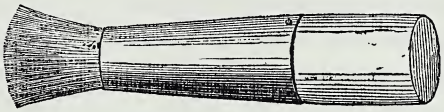
steel point. It would do equally well to give the plate a coat of Brunswick black before drawing the pattern. Obtain some nitric acid and dilute it with a little water, about one-third, and with it etch in the pattern with the acid. This is easy to be accomplished, as the acid will not touch any part covered with the Brunswick black, but will act where the steel point has marked out the pattern. When the pattern is well bitten in to the plate, the graver can be advantageously used on the lines round the pattern, when if the back of the plate is oiled, the pattern will come out with smooth edges. Where the pattern runs in straight lines the plates can easily be cut, but the more difficult patterns are not easily accomplished in metal. If the graver alone was used, the force required would be likely to stretch the edges of the pattern, and the plate would be likely to buckle, which would be very inconvenient in working. It is very necessary for the plate to lay close to the surface to be ornamented, and the softest metal is found to be the best for this purpose, as there is but little spring in it.

The writer has also used thin cardboard and printers' glazed board for this purpose. There is a great advantage in using these boards where constant wear is not required. The surface of the printers' glazed board will resist damp and oil to an extent, and will answer very well for any temporary work. The advantage is that it costs but little, and it can be easily cut with a sharp pen-knife in a short time. A mount cutter would cut a good stencil pattern with bevelled edges out of cardboard or mill-board, that would last for a long time.

Stencil patterns are often done in several colours from one plate; thus the flower and leaves of a rose may be put on in their proper colours, as well as of one tint only.

Stencil brushes are flat at the end, as seen above, and are used over the plate in a perpendicular position with a short

circular movement of the hand. After the removal of the plate



from the work, if any part of the pattern has been indistinctly put in, a camel hair pencil will soon supply the defect.

Exterior Gilding.

With interior gilding, circumstances are much more favourable for the accomplishment of the work than it is possible to be for outside work. The difficulties will be found to be numerous, and in order to overcome them and make the work look as well as possible, we should be prepared to master them. If a gilder sets himself up in a narrow street, with a brisk wind blowing up clouds of dust against his work, he will be glad to know the best method to adopt.

Under certain circumstances the gilder can cover himself round with awning till he has accomplished his work; but oftentimes this is not possible, and difficulties must be surmounted by using a gold size that will be ready for the gold almost directly, and then employing the gold in such a way that the wind will not carry it away.

Before we finish this chapter, any painter with an average amount of skill will be able to successfully gild a shop front, or cover with gold the carved stone work of a public building or monument.

It may be as well to remark here that outside gilding is always done "in oil," as it has to stand the weather, and the foundation must be paint. This is evident when it is remembered that the rain would wash off water gilding, and saturate and peel off whitening. If the material to be gilded be iron,

stone, wood, cement, slate, &c., all must have three or four coats of paint as a foundation to work on.

When the work has received the requisite number of coats of paint, and rubbed down smooth, it is ready to be put in oil. It will be necessary where the paint is not hard, but *tackey*, to pounce over a fascia or other parts of a shop front, before putting in oil, with dry whitening, to prevent the gold adhering to parts where it is not required, which may be done by putting some finely-ground whitening in a calico bag, and make a dabber: the whitening can be removed with a damp sponge after the work is complete.

As we before observed, the gold size used by gilders as a medium to make the gold adhere is of various kinds; some are superior to others, as the gold when laid under favourable circumstances looks well for a much longer time.

For picture and looking-glass frames the size is made of fat oil and ochre, finely ground, and will be found for exterior work to be the best in use, time and weather permitting. This size must remain on the work for twelve or eighteen hours before the gold is applied, and the fitness of the size to receive the gold may be ascertained by finding it to be just *tackey*. The sign writer will find it lay smooth and flow evenly from the sable pencil in warm weather, but in cold weather it is not advisable to use it.

Another vehicle that is employed for its rapidly drying qualities is japanners' gold size, for in less than an hour the gold can be applied to the work. If japanners' gold size is mixed with the before-mentioned mordant, it will increase its drying qualities in proportion to the quantity introduced. Where the gold is required to be laid very quickly, japanners' gold size is used alone; the gold can then be laid in a quarter of an hour, but it is better to add oil varnish, and give it more

time to get ready. Some gilders add boiled oil to their size, but oil varnish will be found for out-door work to answer better. Where gold is seen to be discoloured, it is oftentimes the cause of linseed oil being mixed with the size, which should be avoided.

When the work is ready for the gold, the gilder proceeds at once to lay the shining metal, which oftentimes is a work of some difficulty.

Some gilders in laying on the gold simply turn back the leaves of the book of gold, and apply the leaf to the parts required; but in so doing there is great waste; and we have seen, under these circumstances, the gold carried away by the wind every minute. Other gilders, if they have a calm day and favourable circumstances, shake out into the gold cushion a number of leaves, cut them up as required, and apply with a tip the same as before described for frames, &c. We should recommend the gilder to accomplish his work more economically and with greater pleasure, by adopting the following plan:— Obtain a sheet of white tissue paper, and lay it down on a flat and soft surface, (a table with a soft cloth on it will do,) and commence waxing the paper with beeswax or wax candle, holding it between the thumb and finger, briskly using it from left to right while the sheet is held down by the left hand. When the sheet of paper has received enough wax, the surface will be found to be shiny by holding it up sideways to the light, and to the touch it will be very slightly tackey. When the sheet is so prepared, it is cut up into squares a little larger than a leaf of gold, (say four inches square.) The book of gold is then opened, and the waxed tissue paper pressed on the leaf of gold, when it will be found to adhere to the waxed paper. This operation is repeated till enough gold is mounted to complete the work in hand. The waxed tissue paper can be used for the same purpose many times.

The gilder has now nothing to do but to take up a sheet of tissue paper with the left hand, and apply it to the surface required, smoothly rubbing down the back with the fingers of the right hand, when it will be found that the leaf of gold has left the paper, and adheres evenly to the moulding or lettering prepared to receive it. By this method there is little waste, even in bad weather, as the paper being thin, the gold can be seen from the back, and every particle can be economically used up. The gold on the waxed paper can also be cut up to any size, so as to fit in any inequalities of the surface where it is difficult to get in the gold by any other means.

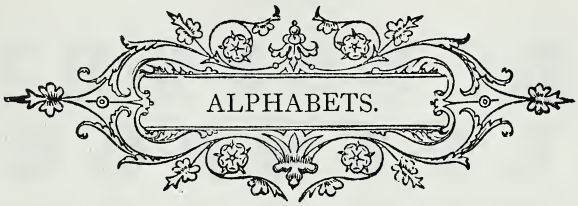
When the work has been accomplished, the whole should be gone over with fine cotton wool to make the gold adhere by dabbing, and also to clean the work, if any superfluous pieces of gold remain, and make it appear smooth.

The lettering on a fascia or sign is usually set out with pipe clay, and the outline made with a sable pencil: camel's hair would do for gold size, but the sable is superior. Where it is desirable to lay an edging of gold round lettering previously executed in colour, the oil size must be evenly laid on, and the edges clean, so as to give a finished appearance to the letter. The same remark will be applicable where the lettering has a gold shading. On green, gold leaf is not so lasting as on other colours, as it soon gets discoloured, owing to the arsenic and other peculiarities in the colour.

We will give a few Alphabets which may be useful.

—o—

It was the distinguishing characteristic of the actual workmen in the higher departments of all work in the Middle Ages, that they worked, not merely as animated machines, but as thinking and observing men. Theirs, accordingly, was that compound character which we now imply when we employ the distinctive title of artist workmen. They worked, indeed, with their hands, but they worked with their minds also.



ROMAN.

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r
s t u v w x y z , ; : . ' ! ? &

ITALIC.

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r
s t u v w x y z , ; : . ' ! ? &

GOTHIC.

A B C D E F G H I J K L
M N O P Q R S T U V W
X Y Z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

ANTIQUE.

A B C D E F G H I J
K L M N O P Q R S
T U V W X Y Z
a b c d e f g h i j k l m
n o p q r s t u v w x y
z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

EGYPTIAN.

A B C D E F G H I J K L
M N O P Q R S T U V W
X Y Y , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

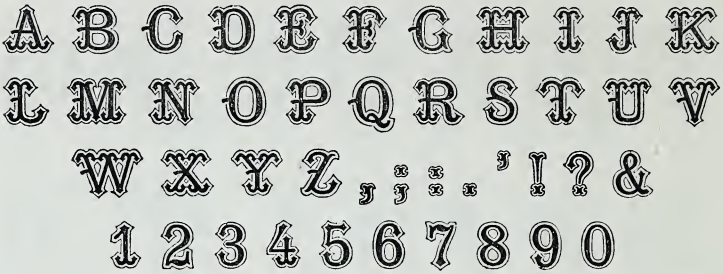
IONIC.

A B C D E F G H I J K
L M N O P Q R S T U V
W X Y Z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

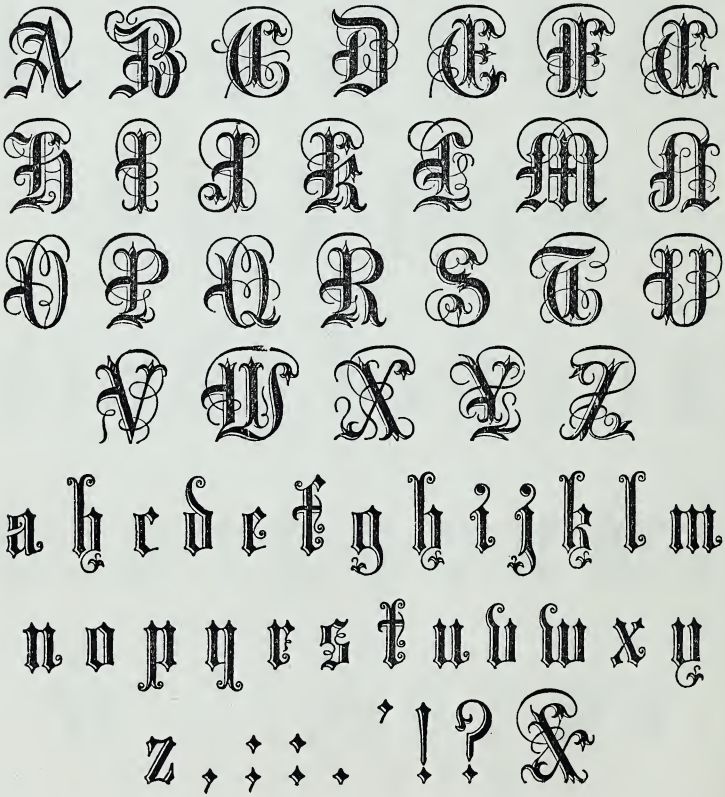
OLD ENGLISH.

A B C D E F G
H I J K L M N
O P Q R S T U
V W X Y Z
a b c d e f g h i j k
l m n o p q r s t u
v w x y z , : ; . ' &

TUSCAN.



OLD ENGLISH.



LATIN CONDENSED.

A B C D E F G H I J K L
M N O P Q R S T U V W X
Y Z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

LATIN EXTENDED.

A B C D E F G
H I J K L M N
O P Q R S T U V
W X Y Z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

SANS-SERIF OUTLINE.

A B C D E F G H I J K L
M N O P Q R S T U V W
X Y Z , ; : . ' &
1 2 3 4 5 6 7 8 9 0

SANS-SERIF OUTLINE.

A B C D E F G H I J K
L M N O P Q R S T U
V W X Y Z , ; : . ' ! ? &
1 2 3 4 5 6 7 8 9 0

MONASTIC.

A B C D E F G H I J K L M N O P
Q R S T U V W X Y Z

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Ancient Monastic Institutions.

TUDORESQUE.

A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x
y z , ; : . ' ! ? & 1 2 3 4 5 6 7 8 9 0

SPIKED.

A B C D E F G H I J K L M N O P Q R S
T U V W X Y Z , ; : . ' ! ? &

CLEANING & RESTORATION OF OIL PAINTINGS.

A FEW words on the preservation of pictures may not be out of place, as this little work may fall into the hands of those who possess many valuable works of art, who will be glad to receive a few hints on the subject.

Remarks on this subject would not be necessary in some countries, as exposed wall paintings in the Egyptian tombs are as fresh now as the day they were painted. This is attributed to the warm dry atmosphere, amongst other causes, which has preserved the colours in a brilliant condition for thousands of years.

In England the great cause of the deterioration of pictures is the cold damp atmosphere, so prevalent in our climate, and it is necessary where pictures are hung to occasionally air the rooms where they have been left some time without fire.

It need not be mentioned that it is ruinous to hang pictures on a damp wall. A wall generally damp must be lined with thin sheet lead, and papered over with damp-proof paper before pictures of any sort are allowed to be hung.

In a new house, especial care should be exercised to make

sure that all the walls are dry before trusting any pictures in the rooms.

Where a gallery is provided for the reception of pictures, proper means are used for ventilation and heat, and greater care can be bestowed upon them than is possible in a dwelling house, where, as in a dining room, the vapours from the dining table, and also from gas and oil lamps, are constantly at work in their deterioration; and when conservatories open into apartments, the damp must diffuse itself from the watering of the plants, the damp earth, and other causes. These in time exercise an influence on the pictures in the adjoining apartment, and slowly and insidiously work mischief, if not keenly watched and guarded against.

With valuable oil paintings a sheet of colourless plate glass securely placed in the frame, air tight from the front, and the picture placed so as not to touch the surface of the glass, being secured at the back to keep out the dust, will be found to preserve its brilliancy of colour for a number of years. There is an objection to glaze oil paintings, as they cannot be viewed so well, owing to the reflection of the glass, but the advantages far outweigh the objection. It would be as well if both pictures and frames were covered up during the cleaning and dusting of the carpets and furniture, but the practice of covering up oil paintings for many months together during the absence of the owner cannot be recommended.

Frames should be regularly dusted with a feather duster. Oil paintings should be taken down at least once a year, the frames cleansed from dust, and also the back of the stretcher. The picture should then be carefully sponged with clean cold water till the dust and fly spots have disappeared. An old silk handkerchief then applied with moderate friction will be all that will be required. On no account use soap or any alkali.

With regard to water colours, chromos, and engravings, the glass should be pasted in the frame, and the picture would be better to stand back from the glass, when the damp and other vapours will not be likely to injure them. We have seen on very foggy days, where doors have been suffered to be open, the vapour condense on the glass and run down, communicating with the picture behind, and leaving a stain on the margin. This should be guarded against.

Lining Oil Paintings.

The majority of oil paintings have canvas for a base, and are consequently liable to damage from the ravages of time and accident. A rotten canvas is a common thing, produced oftentimes by being hung in a damp place, which, if insects attack, will destroy; and, if wedged up in this condition, the result is a fracture across the painting. When pictures have thus progressed to decay, the only remedy is lining or laying down the picture on a new canvas back.

In the first place, clean off any old varnish or dirt that may have accumulated on the painting, so that when the operation is complete the face of the picture may not be unnecessarily damped. The picture should then be carefully cut from the old stretcher on which it has been tacked, and it should be then squared up on the four sides. A large smooth sheet of paper should then be pasted over the face of the picture, and if it is a large size, or the canvas very rotten, two or three sheets would be necessary to preserve the painting during the operation from damage. Oftentimes it will be found advantageous to paste the sheets of paper on the painting before it is cut from the frame, as it frequently contracts and throws it out of shape. A very smooth table must then be used for the succeeding operations, the picture must be laid down on its face, and the

back well cleaned of dirt or any unevenness, which may carefully be done with a knife. The painting is then covered very evenly with glue and paste in equal quantities, and a little corrosive sublimate to prevent insects from attacking the canvas, and a new canvas, quite two inches larger every way than the picture must be evenly laid down. It must then be well rubbed down by the hand, using as much pressure as possible to make every part adhere. When nearly dry, a heavy heated iron must be passed over the newly laid canvas to make it perfectly smooth. It will be seen that a very smooth table is necessary, as by this operation every inequality will show on the picture. The iron must not be too hot, should be a good size, and at first be lightly passed over every part, and no heavy strokes on any one part be given, as the object is to bring the picture to an even surface. We have warned our readers not to have the iron too hot, and this caution will be found to be necessary when the consequence would be a singed canvas and discolouration of the paint. Before using the iron, be careful if the picture has been painted with thick masses of colour for effect, to lay some fine woollen cloth underneath it, or it will be damaged, but if the picture is smooth the cloth will not be required, or the iron so hot. An iron too cold will not effect the object required; the medium heat will best suit the purpose.

A new stretcher should be ready-made, out of dry deal, with a cross bar to keep the picture firm, and if a large picture, two or more should be used. The stretcher must be made nearly one inch larger both ways, so as to allow half an inch margin round the edges. The new canvas with the picture on it may now be laid on the stretcher, and evenly tacked round the edge in its place. Some will prefer to glue the picture round the edges, but with small subjects it is unimportant. When the picture has well hardened, the paper

may be removed from the face with a damp sponge; and lastly, carefully rub the face with an old silk handkerchief to take off the last remains of the damp. Drive up the wedges.

Damaged Canvas.

Accidents sometimes occur, whereby the canvas of a picture becomes torn or damaged, and it may not be desirable to line the picture. This may be repaired by laying the picture down on its face and fastening a piece of canvas at the back, which, if neatly done, will not show on the face of the picture. For this purpose lay powdered mastic between the canvases, when a hot iron will neatly join the two together. Some would use melted wax for the purpose, but the above will be found superior. Lining would in most cases be preferable.

Cleaning Oil Paintings.

It is oftentimes the case that both frames and oil paintings are left with the gilder to renovate, and it is highly important that he should be informed as to the best methods in use for cleaning, re-mounting, varnishing, &c., and also to know some of the best receipts used in the various processes. It may be as well to caution the inexperienced not to attempt too much, as an error in judgment, or careless manipulation, may entirely ruin a valuable picture; and those who wish to undertake the restoration of oil paintings must, in the first place, be CAREFUL, and then try some of the most simple processes before trying those which would even tax the skill of the experienced. The cleaning and restoration of paintings is usually paid for most liberally, and to the man of business this chapter will be worth gold and silver, while the amateur who wishes to try his hand on one of his own pictures, will be delighted with his success if he possesses the skill and judgment to follow the instructions laid down. Oil paintings come to hand for restoration in almost

every state of decay; and where a valuable work of art has been neglected, with the canvas rotten, or worm eaten; or where the body of paint has been parted from the canvas, or where the picture is cracked badly, and pieces of the subject fell away, it requires thought, judgment, and a careful and skilful man to treat these works of art so that succeeding generations may be delighted with their beauty.

Cleaning oil paintings is a most important operation, and one that requires great judgment as well as skill. Judgment to decide what treatment is really required for the state of the picture, and skill to successfully carry out the necessary work. The condition in which pictures are found are so various, and produced by so many different causes, added to which, the various grounds on which colours of various chemical proportions are placed, justifies our opening remarks. A few cautions may be acceptable, as no positive rules can be laid down for the successful treatment of every subject.

It would be better for the inexperienced to try the effect of his experiment on a small portion of one corner of the picture before venturing on the broad surface. Care should be used not to saturate the face or back of the picture with water, as the absorbent nature of many of the old pictures would completely ruin them. Damp will make canvas rotten, and it is difficult oftentimes to get the damp out of a painting when once it has been saturated. A soft sponge with the water squeezed out of it, or a soft leather well wrung out, should be the extent of water application, and the picture never flooded. If damp is applied to the back of an old canvas, it is likely the picture will blister, or come up from the base. Before commencing, it is almost needless to say the dust and dirt on the surface should be removed by sponging.

In cleaning paintings, our efforts will be directed to the

removal of three things:—Stains or discolourations, dirt, and varnish. A remedy for the first is ox gall, applied with a soft brush till the stains disappear, and sponged clean.

The removal of varnishes oftentimes occasions great trouble, especially when it is old and hard. If it is mastic, and has not been laid on many years, it can be removed by the friction of the finger; but a solvent must be employed to remove old hard varnish, and requires careful manipulation. The picture must be laid on a flat smooth surface, and having made up a wad of cotton wool, give it a dressing with the following mixture:—

2 ozs. wood naptha,
1 oz. spirits of salts,
¼ pint linseed oil.

Commence with a circular motion of the hand; after a time the picture, if very obscure, will gradually come out in all its details, but care must be taken that the rubbing is not carried too far, or the work of art will suffer. Each time the mixture is applied to the rubber, it should be well shaken, and a new and clean place of the rubber chosen. The lightest parts of a subject should be selected to commence upon, so that it can be then seen how the work is progressing. The look of the painting and the colour of the rubber will tell the practised eye when to stop the action of the solvent, and it should be wiped over with spirits of turpentine. The above receipt will work much quicker where the varnish has not been laid on for any length of time. A stronger solvent for varnish may be required, and any of the following may be used, but only in practised hands, as they are known to be powerful agents in their work:—Spirits of wine, oil of tartar, pure alcohol, liquor ammonia fortis, soda, ether, naptha, and oil of spike lavender. In using any of the above, the operator should know what antidote to apply,

in case their action is too rapid. Copal is the hardest varnish, and will require some of the more powerful.

It is scarcely necessary to mention here, that where a picture has not been varnished, no solvent must be applied to remove any dirt, &c., but a leather wrung out with water, and a little of the finest whitening, to produce a little friction, will most likely clean the surface.

The removal of varnish by friction is a common method, and is done by rubbing the face of the painting with the first and second fingers of the right hand, previously dipped in powdered resin. The varnish, if it is mastic, will soon give way, and come off in fine powder. The surface of the painting must be wiped frequently to see how the work proceeds, or it may be very much damaged.

If pictures have received damage, and present an uneven surface, and require the restoration of colour, all indentations on which it is desired to apply colour should be stopped up with either the stopping or the compo used by gilders. The first is parchment size and whitening, mixed into a thick paste, and the second is glue and whitening, the receipts for which can be seen in another part of this volume. Either of these must be carefully laid in with a small palette knife or modeller, and well smoothed down. The surface of the picture should be then cleaned over with turpentine.

The restoration of colour in old pictures is difficult, and in many the colours never can be restored to their original beauty. Where pictures have been hung in dark corners, and have scarcely seen daylight, they would be greatly benefited by being placed in a strong light for a length of time. We have recently found this to be very beneficial to a pair of portraits, looking very much as if the artist had painted a post mortem representation, which came out in the course of nine or ten weeks in

blooming health. The effect of a strong light on paintings, in the restoration of colour, is sometimes wonderful.

Where a picture has been restored, before varnishing it would be advisable to put on a layer of weak isinglass, which is transparent, and would be a slight interposing medium. This will prevent the new paint cracking, if varnished before it is sufficiently hard.

Picture Restoration.

In the course of the correspondence on the genuineness and condition of some of the paintings in the National Gallery, Mr. J. C. Robinson, has furnished the following particulars of the theory and practice of picture restoration :—

The thick, solid painting of "oil pictures" is generally executed with colours in which the oil greatly predominates, but the more delicate and transparent tints, and minor details, are executed with varnish colours tempered with a *minimum* quantity of oil.

Now, the oil vehicle is the hardest, toughest, and most durable ; the varnish medium, on the other hand, is much more tender and evanescent. Moreover, the transparent tints executed with it are very thinly applied, most frequently on the surface of the picture, as mere transparent washes, technically called "glazings." In the pictures of some schools, and particular masters, the place which these "glazings," &c., occupy in the general pictorial scheme or "technique" is all-important. For instance, in the works of the Venetian masters, commencing with Titian, of those of many of the Dutch seventeenth century painters, of Claude Lorraine, and, above all, of our own Sir Joshua Reynolds, the entire lustre, depth, and vivacity of colour—all the most facinating qualities, in fact– are due to the infinitely various and skilful manner in which the final or superficial paintings, "glazing," and "tonings," are executed in these rich, transparent varnish colours.

But from the beginning to the end of the "building up," if I may so express it, of every oil picture, portions of the work are alternately executed in the harder oil vehicles and in the tender and more perishable transparent varnish colours. These pictures are never homogeneous in their composition—that is, they can never

oppose exactly the same amount of resistance to deteriorating agencies in all portions of their surface or substance.

Pictures are, unfortunately, habitually subject to be cleaned—*i. e.*, washed over for various purposes with fluid solvents, such as turpentine and spirits of wine. The latter fluid, if applied in sufficient quantity and strength, and for a long enough period, to the surface of the picture, would entirely dissolve it, and remove every vestige of the paint from the canvas or panel; but this particular solvent acts irregularly and unequally—very slowly upon the portion of a picture painted with the solid oleaginous vehicle, but rapidly on the transparent resinous tints; in other words, the alcohol rapidly dissolves the gum resins of which the varnish colours are mainly composed, while, at the same time, it leaves the oil vehicle comparatively untouched.

The effect, then, of passing a wash or spirits of wine over the naked surface of delicate, transparently-painted pictures—such, for instance, as those of Claude Lorraine—may be easily imagined; it is to reduce them immediately to things of shreds and patches; portions, for instance, will be entirely effaced, others half obliterated, while others will be scarcely, if at all injured; but the final result, it is scarcely necessary to say, will be absolute, irretrievable deterioration.

In order to protect the delicate and easily-injured surfaces of oil pictures, and for other legitimate reasons, they are always, sooner or later, covered over with superadded varnish, often thickly piled up from time to time, one over another, during long periods. These coats of old varnish, however, are liable, sooner or later, to become dirty and opaque, and so more or less to conceal the painting beneath; and then it becomes requisite to remove them, either entirely or partially. If nothing but the right kind of varnish has been used, the process is a perfectly simple and safe one; but if improper kinds of varnish and other "nostrums" have been at different times applied, the operation may become very complicated and difficult. The practical skill and, above all, the long-acquired experience of conscientious and painstaking picture cleaner is then imperatively required. The matter may then be not inaptly compared to the surgical treatment of a human being. The really accomplished picture cleaner acquires, as it were, much the same kind of intuitive insight into the state of a picture as an eminent surgeon does into that of a patient upon whom he is to operate; and just as the

learned practitioner saves his patient and restores him to health, while the ignorant, blundering quack may kill him with a single touch, so a picture may be rescued from the inevitable deteriorating influences of time and accident, and restored, as it were, to fresh life, or blotted out for ever by presumptuous and unskilful hands in the twinkling of an eye.

There is only one kind of varnish proper to be applied to oil pictures—pure mastic dissolved in turpentine; for, in addition to other superior qualities, this varnish may at any time be removed in a peculiarly safe and convenient manner. For centuries this varnish has been known and universally employed as the pre-eminently fit and proper one. Unfortunately, it was reserved for this country of ours, at the period of its densest ignorance in matters artistic, to give rise to a race of reckless and stupid quacks, by whom a fatal admixture—worse than poison—was brought into almost universal use, and made to supersede the only true and proper vehicle before alluded to. Towards the end of the last century, more especially, it became the frequent practice with English picture cleaners and restorers to mix oil with the varnishes with which they covered ancient and modern pictures alike. Two overwhelming evil results ensue from the use of oil-varnish. In process of time it gradually darkens and loses its transparency. According to the dose and kind of oil mixed with the varnish, and the thickness of the super-added coats, it gradually passes through every tint, from pale yellow down to deep chestnut, brown or black, while at the same time every year that it remains it becomes harder, tougher, more concrete, and difficult to remove. This varnish, when much oil enters into its composition, is, in fact, indentical in composition with the vehicle used in the painting of the picture, and when applied directly on the uncovered surface of the work and allowed to remain for many years, it becomes, as it were, part and parcel of the painted surface itself, and cannot be removed by any known means without injury to it. In some rare cases it is quite hopeless to attempt to remove the varnish, and the picture so covered must be left to languish from year to year, and finally perish in a sort of Stygian fog.

Now, perhaps the worst offender in this serious matter was the first keeper of our National Gallery, the late Mr. Seguier, an eminent picture dealer of forty or fifty years ago. This disastrous person invented an oil varnish of his own, which he called *par excellence*, "the Gallery varnish." The oil which he mingled with the varnish was of the worst possible kind, and the dose seems to have been of

the largest. It was boiled linseed or "drying oil"—a kind of oil which actually undergoes slow spontaneous combustion, and in process of time becomes absolutely carbonized and black. With this diabolical mixture he literally covered over and over again nearly all the great masterpieces in the National Gallery, and probably also hundreds of other admirable pictures in the country houses and galleries of the gentry and nobility throughout England. For twenty years more the fatal effects of this varnish have been recognized by all really well-informed lovers of art, and successive keepers and directors of the National Gallery have made attempts to remove it from the pictures which had suffered the most from its effects. Now, the removal of this varnish from every picture to which it has been applied is quite imperative, and every year—nay, every day—which is lost, increases the risk and difficulty of the operation, inasmuch as the blackening and hardening is ever in progress.

Picture Cleaning and Restoring.

Some half century ago might be seen, either in the shop windows or suspended at the doors of most of the metropolitan and provincial picture dealers, the portrait, in oil colours, of some aristocratic or picturesque-looking head, the one half of the canvas of which was as bright as the day it left the artist's studio, while the other was begrimed with the accumulation of the dirt of ages. This, at that period, served as a sign that the occupier of the establishment undertook the extremely delicate, and in many cases no less difficult and responsible task, to clean and restore the most apparently hopeless work of art as *vide* the specimen submitted to the public. But in several instances these examples of the art were mere delusions and snares to entrap the owners of invalided oil paintings, many of which latter, being almost worthless in their original state, were only made worse by the removal of the cloak of Time, while those that were good often cost more in the process than what the limner was originally paid for them. But this would have been little matter for complaint if the purifying course to which these works were submitted had been of a legitimate and not of an injurious nature. This was, however, generally attended with the latter result, the picture to be cleaned having undergone a description of hurtful jugglery, quite in keeping with the semi foul and fair lure that had tempted its owner into the shop, the presumedly restored specimen

being a modern and comparatively recently-painted canvas, stretched upon an old frame, and one half daubed with drying oil and varnish, mixed with bitumen, vandyke brown, or any dark semi-transparent colour, and the fine dust from shelves, &c. In this way very many really excellent pictures, and in some cases works of a high order, were irremediably injured or destroyed ; the scrubbing process to which they were generally submitted, by persons without any practical knowledge of painting or feeling for art, having removed those last apparently careless touches and thin glazing of the master hand, upon which he relied to give a work of great and laborious thought the appearance and elegant dash of a conamorish ease. That such practices are still too prevalent, and that those who profess the power to clean and restore a picture to its pristine state, have amongst them the ignorant, the careless, and the inefficient, there exist quite sufficient proofs fully to justify the letting the light into a trade, the respectable members of which will rather benefit than otherwise by such an *exposè*.

Nor is it alone against the pretenders to a most responsible profession we would caution our readers, for there are those amongst the general public who, mayhap, possessing a little smattering of art, are equally ready to afford advice which may be as baneful in its results as the more wholesale scouring of the shop. As a case in point, we saw but the other day the application of soap recommended as a preliminary to varnishing a picture ! the caustic alkali in which would shortly remove the entire three operations of a modern painting, and, as if by magic, destroy the thin and transparent glazings which render, particularly the old masters', works so rich, and leave but the raw and crude empasta and groundwork, which sustain the last and most important operations of art, as was noteworthily the case at one of our great and national galleries of pictures not many years since.

It is not, however, to encourage amateurship or revive dilettantism that we make these remarks, but as a warning which may be still required. Indeed, there exist names high in the profession, to whom in many cases we would strongly recommend the owners of valuable pictures to resort for consultation and practical interference, for the amateur would assuredly do more harm than good. For instance, in the removal of old and hard varnish, which is often the first process in cleaning a picture, it requires no little knack and discernment to know when the friction applied to the surface has penetrated through this covering, the friction being caused by a continual rubbing of

the varnish to and fro with the end of the fingers until the varnish is broken up into a fine powder. The beginner will find that this becomes, after a while, a painful operation, as the flesh gets extremely sore, and it is only practice and time which will render the skin of the fingers sufficiently hard to follow the operation with impunity. Yet no other method which can be safely depended upon is known, although there are expedients which are resorted to by some persons, at the imminent risk of the work under their charge. The great aim of the cleaner ought to be to watch with the greatest care when he has penetrated the varnish, and arrived at the painting itself, and the nearer he approaches it of course the greater ought to be his caution, lest he should apply the friction to the glazings, which would come off like the down of a butterfly's wing, with so comparatively gritty a substance as pulverised varnish between the fingers. The dust must therefore be removed very often, and the parts from which it is removed examined, to see to what extent the process may be continued or otherwise.

If, however, the old varnish has not suffered from age, and it is the object merely to clean its surface, a little lukewarm water may be first applied with a sponge until the water ceases to be discoloured.

If then the varnish still presents an appearance of dirt, take a potato, and, cutting it in half, apply the fresh portion to the varnish, and by a series of circles all over the surface, completely rub every part. Again apply the lukewarm water until it shows no taint of dirt.

Should, however, the picture continue to exhibit traces of dirt, pass a sponge dipped in warm beer over it. Then, after it has become perfectly dry, wash it with a solution of the finest gum dragon, dissolved in pure water. Blue starch is sometimes used, but this is said to penetrate to the painting in those parts in which the varnish may be thin or possesses interstices, and this will tarnish and eat out the colouring. We have known the white of eggs used to refresh the glaze of the varnish, but this only tends to throw a partly transparent surface over the picture, and thus far, with bad productions, serves to conceal the faults of the execution.

Many pictures may come under inspection which have not been varnished. And here it may be mentioned that pictures should not be varnished for at least some months after they are painted, that the pigment may become thoroughly set and hard, and that, before they are varnished, the application of a potato, as before shown, should always be resorted to, to remove the exudations of the oils

which rise to the surface, as well as the dirt collected; and this simple process will be quite sufficient to clean nine out of ten modern works. Artists will also find the use of the potato most valuable before commencing the progressive steps of their work, as it gets rid of that annoying greasiness which causes the newly applied and wet paint to run, after the manner of water upon a tea tray.

Should, however, the painting require repairing as well as cleansing, from the decay or the defects in the material it is painted upon, then it may be found necessary to transfer the entire work to a completely new canvas, an undertaking which at the first blush would seem surrounded with almost insuperable difficulties, if not totally impossible. Now, if our readers will follow us, they will see with what certainty and facility a feat so apparently formidable can be accomplished.

We have a picture with its linen back perfectly rotten or worm-eaten, and almost too tender to touch. Add to this, the work of the master is likewise covered with cracks, and otherwise in as bad a case as can be. We firstly clean this decayed picture with more than usual care, for fear of breaking through the canvas, and which would involve a more tedious process of restitution. We then with a sharp knife cut all round between the stretcher or frame and the canvas, and put the former aside; then spread the work with its face downwards upon a smooth drawing board or table; the back is now presented to us; then well moisten it with boiling water; this will shortly soften the canvas. Now we turn the picture over with the subject uppermost; stretch it out and fasten it with drawing pins all round its edges to the board. Having ready a pot of strong glue, very hot and liquid, spread the glue rapidly and equally over it. Now take a cloth which more than covers the picture all round by two or more inches, and spread it over picture and glue, which in turn fasten down to the table as before, and place the whole in the sun or open air to dry as soon as possible. When it is dried, it is to be detached from the board, and nailed down again with the back of the painting uppermost. A little raised border of wax is made all round the edges, and the board being placed exactly level, a mixture of nitric acid (aquafortis) and water is poured upon it. If this mixture be too strong it will burn the painting; care must therefore be taken to prevent this, by dipping your finger in the mixture before it is used. If your finger does not turn yellow immediately, it is a sign that the liquors are mixed in a due proportion. This mixture remains upon the canvas till the texture is

quite destroyed, and the threads eaten or rotted thoroughly, which can be easily ascertained either by the eye or the touch. The liquor is then poured off, and the threads of the canvas are easily taken off with a bone or ivory pallet knife, or other instrument not of metal. The crust of the painting will then be found intact, glued with its face downwards to the linen cloth before mentioned. The crust is then to be washed and cleaned with pure water, after wiped with a soft sponge, and left to stand until quite dry. It is then, in its turn, to be covered with glue, wherein a little brandy should be mixed, to make it stronger. Upon this glue a *new* canvas is to be immediately spread, quite smoothly and well pressed, so that it may stick on every part. The best way of pressing it is with plates of lead or slabs of polished marble, care being taken to wipe the new canvas from time to time, to prevent its sticking to the plates, by means of the glue which oozes through the interstices of the fabric. All that now remains to be done is to take away the linen cloth and the glue which covers the *face* of the painting. As soon, therefore, as the last glueing is dry, the whole is to be detached from the board, and the linen cloth turned up ; by moistening it with the mixture of aquafortis and common water, its texture will soon be destroyed, and it may be taken away, and then the glue may be easily dissolved by means of hot water. Thus is the painting transferred entire and perfect to a new canvas, which in its turn can be stretched upon a proper frame.

There is a proper tool for stretching canvas upon their frames to be had at the tool shops. It has two broad nippers with teeth-like grooves, to hold the canvas, and a fulcrum at one side, by which the leverage obtained may be very powerful. It is therefore necessary to be careful in the re-stretching of old pictures, not to put too much strain on the canvas, or former cracks may be re-opened and new ones made. The picture is, however, generally in a sufficiently pliable state immediately after the process before detailed, to prevent its cracking. Still, discretion must be exercised, and should the canvas bag after its being nailed to the stretcher, there are two wedges to be found in each corner of the frame, to which a gentle tap may be given, and a drum-like tightness thus secured. Should, however, the canvas have been nailed on unevenly, and in a way which these wedges will not remove, the application of some weak fluid size to the back of the canvas will, as it dries, produce the tightness desired.

When paintings are upon wood or panel, as it is termed, the wood

must be pared till it is very thin, and the mixture of aquafortis and common water being poured upon what remains, will soon disintegrate the fibre of the wood, and render its removal perfectly facile. The same process should be followed as with canvas, only the picture at completion is attached with glue under pressure to the wood.

It ought to be remarked that the cleaning of a picture which has been varnished, and one that has not undergone that process, are two different things. Liberties may be taken with the former which would prove fatal to a picture not thus protected ; in either case, as a preliminary experiment, the potato may be applied without fear of injury, provided that the moisture left by its juice is cleanly removed from the unvarnished picture. We have likewise said that blue starch, so often used, is injurious, and it may therefore be asked why potato, the basis of starch, is not so. This we are unprepared to answer without entering into a chemical explanation which would involve space.

Many of our finished oil paintings collect upon their surface what is termed "bloom," which in many instances entirely obscures the beauty of the work, and several receipts have been given for its removal ; but all of these, or nearly all, are only temporary cures, the bloom returning sometimes with greater depth and opacity. Here, again, the potato is said to be the best remedy, if not an entire cure. Apply it as before, wash off with clean cold water, and then wipe the surface of the picture with a little sweet or nut oil with a silk handkerchief until perfectly dry.— *The Exchange and Mart.*

Scientific Picture Cleaning.

Science has for some time been busy in Germany with the subject of picture-cleaning, and with success ; but the results are little, if at all, known in this country.

M. Radlkofer, of Munich, proved some time since, by microscopic observation, that the deterioration of the works of art hung in the Pinacotheca of Munich, and in the galleries of Schleissheim, was not due, as had been suspected, to any organised matter. M. de Pettenkofer, the coadjutor of, and successor to, Liebig, has succeeded in tracing the cause of the mischief ; and M. Fr. Goppelsrœder, Director of the Municipal School of Industrial Chemistry at Mulhouse, has made a report on the subject to the Industrial Society of that town, declaring that M. de Pettenkofer's theory and mode of proceeding are fully confirmed by all who have repeated

his experiments, and who, like the reporter, have occupied themselves seriously, and for a sufficient length of time, with the restoration of pictures.

Let us now describe M. de Pettenkofer's theory and modes of operation.

It is evident that even those colours which are the most lasting, from a chemical point of view, cannot preserve their tint and primitive brilliancy, except upon the condition that the siccative oil which has penetrated them, and in which their atoms may be said to be suspended, retains its optical properties and original colour, which cannot be independent of the chemical composition of the oils.

Linoleine (the lin-oxyne of Malder) is the principle of the greater portion of the oils used by artists, but unfortunately this principle cannot be prepared in a pure state, and painters are compelled to employ either linseed oil, which contains 80 per cent. of linoleine, or poppy oil, which only contains 75 per cent. Linoleine, which, when pure, is liquid, solidifies by oxydation on contact with the air, without decrease in volume, but with an increase of 10 per cent. in weight. It is because linoleine acquires an unvariable consistency in any temperature, that colours, after a picture is dry, are not affected by moderate pressure, by fatty or ethereal oils, nor by varnishes.

As there are always and everywhere in the world molecular and atmospheric movements going on, paintings naturally undergo chemical and physical changes. These changes are far more frequent in the oil than in the colours, so that the quantity of oil required to mix any pigment properly becomes of serious importance; and experiments made by another chemist, M. Wurm, of Munich, have shown that it is not the specific weight of the colouring matter which determines the quantity of oil that will be absorbed.

It may be stated in general terms that colours which contain the least oil are those that exhibit the least change. Lin-oxyne, the product of the oxydation of linoleine, becomes gradually hard and brittle, even when all the fatty and non-siccative oil has been removed by ether and the ethereal oils.

Paintings absorb moisture from the atmosphere, and afterwards allow it to evaporate. After a longer or shorter period, when these successive absorptions and evaporations of moisture have been pretty often repeated, the colour laid on by the artist generally has lost its primitive aspect, and ceases to produce the same optical effect.

As to the means employed previously to the discoveries of M. de Pettenkofer for the regeneration of the physical condition of the colours, it must be remembered that the artist himself varnishes his dry picture, to fill up the pores, which during the work contained oil, but which after the picture is dry contain only air and varnish. He employs resinous oil, solutions of resin, in essence of turpentine or in fatty or drying oils. These last are very dangerous. After a certain time the varnish perishes, and no longer allows the light to pass through it; new varnish is applied, and the operation is repeated unfortunately until all brilliancy is destroyed. To repair the evil, there are no other means but the removal of the varnish, the nourishing of the colour with a fresh coat of oil, and, after drying, to apply a new coat of varnish,—to say nothing of brush-work! When the restoration is made by moistening the varnish with water, the effect after drying is a white spot wherever the water has been applied.

M. de Pettenkofer has shown that paintings are constantly liable to those successive condensations and evaporations mentioned above, which cause loss of cohesion of the varnish. He has, moreover, succeeded in re-establishing the molecular cohesion by means of the vapour of alcohol mixed with the air; at the end of forty-eight hours the resin takes up and condenses from 80 to 100 per cent. of its own weight of alcohol, which, however, it loses again after a short time. The resin thus softened becomes absorbed by the painting, and by the same act the cohesion of the resin and the colour is re-established. Softened resin has less effect on the colours of a painting than varnish applied with a brush, for the friction of the latter may cause displacement of the colouring bodies.

M. de Pettenkofer's plan is simple. In the first place he makes a small experiment on the painting to be restored, by means of a small round box made of cardboard, the inside of which is dressed with glue, and the bottom lined with flannel moistened with alcohol at 80°, the picture is freed from dust, and the box turned down upon a part of it. The spot thus restored serves as a guide for the general restoration of the work, which is done by fixing the picture to the lid of a box, the bottom and sides of which are lined with flannel moistened with pure alcohol, as above described, and shutting very closely, so that a small quantity of alcohol serves for a series of pictures.

In a work published by M. de Pettenkofer on the subject, some extraordinary instances of restoration of colour are given; as, for

instance, that of a green which, by the effects of time and atmospheric influences, had changed to a greyish blue, as if the colour had been composed of blue and yellow, and the latter had disappeared. In this work M. de Pettenkofer points out different varieties of treatment necessary in the cases of resinous varnish and oil varnishes, and, finally, what must be done to retard the return of the molecular separation in paintings that have been restored.

A second method, indicated by M. de Pettenkofer, consists in the use of the balsam of copaiba, which dries very slowly, and which resembles in constitution the varnishes composed of dammer or mastic dissolved in essence of turpentine. The copaiba should have the consistency of unboiled oil, but must not contain either oil, resin, or essence of turpentine. The essential oil of the balsam of copaiba is less volatile in ordinary temperatures than the essence of turpentine. The balsam of copaiba fulfils well the optical conditions of the ordinary resinous varnishes, and may be applied to certain parts only of a picture without being perceptible ; it fills up the pores which have been produced in the coloured parts, and sometimes this object may even be effected by applying the balsam to the back of the canvas. The application of copaiba and of the vapours of alcohol has in many cases to be repeated several times, and this may cause the appearance of cracks previously invisible, in which case it is only necessary to rub them with a small quantity of the balsam, and expose them to the vapour of alcohol.

If there be an excess of resin, and, above all, if the picture has become too yellow in tone, it is absolutely necessary to remove that excess, but without injuring the primitive character of the colour, before commencing the restoration proper. The varnish, however, can never be entirely removed without some slight deterioration of colour, because the resin is not only superposed, but incorporated with the colour.

To remove the excess of resin, either rub with the finger dipped in powder of colophony, or dissolve it with essence of turpentine ; and, on the other hand, to fill the pores of the picture with resin, first wash with water, and then with essence of turpentine, and having nourished it, as it were, with balsam of copaiba, the part is made to swell by the application of vapour of alcohol.

If the picture contains both resinous and oil varnishes, the former alone takes up alcohol, becomes softened, and retires into the colours, while the latter remains on the surface, and renders it dull, and even

rough. In this case only the balsam of copaiba is used, and smoothness of surface is obtained by pressure.

A painting regenerated by means of balsam of copaiba resists for a long time the influence of the condensation and evaporation of humidity.

M. de Pettenkofer has made many important observations in the Pinacotheca of Munich, amongst which was that molecular separation appeared to the extent of 52 per cent. in the paintings placed in galleries with a northern exposure, and only to the extent of 10 per cent. in those which have a south aspect. He insists on the necessity of preventing the formation of dew, or condensation of water, on the surface of pictures, and that those of real historical value should be protected by glass ; and, he adds, it is well to cover the back of all pictures painted on canvas with balsam of copaiba, for by means of this precaution cracks, which would have developed in time, close up of themselves.

Restoration, on the plan of M. de Pettenkofer, has for object the preservetion of a work of art in its primitive state, by re-establishing from time to time the normal optical condition of the varnish and of the oil ; ordinary restoration can no more replace the painting than chicory can replace coffee ; it is the task of future restorers to preserve or to give back to paintings, by a physical process, the clearness and solidity of the primitive colours, and to preserve them against the bad effects of time. Then only will a sacred duty be performed towards artists by preserving the productions of their genius.

M. Goppelsrœder exhibited some remarkable examples of restorations, and explained a process of using hot vapours of alcohol, the picture being first washed with water, and next purified with a brush containing very pure essence of turpentine, the latter operation being repeated after the application of the alcohol in order to remove any excess of resin. The alcohol was placed in a china vessel contained in a larger one of copper, which being heated formed a hot-air bath, and the pictures were suspended horizontally over, and as near as possible to, the vessel containing the spirit.

Treated in this manner, unvarnished sketches in oil, which may be said to have grown grey in drawers, became under the influence of the hot vapour of alcohol, as fresh in appearance as if they had just quitted the easel. A winter landscape was converted into a summer scene in a few minutes ; and a dark canvas which, according to the old hypothesis, was covered with microscopic organisms, was perfectly restored in a few minutes.

It should be mentioned, perhaps, that M. Stuckelberg, painter, of Bale, and M. Falkeisen, the keeper of the museum of that town, were present during M. Gopplesrœder's experiments, and expressed their astonishment at the wonderful effects of hot vapour of alcohol. Nevertheless, the reporter strongly recommends the use of the cold vapour, as above explained, in all important cases.

It is certainly a long time since Science has done such an important service as in this discovery for her sister, Art.—*The Architect.*

Varnishing Paintings.

Some artists employ for new paintings white of egg as varnish, others do not varnish their paintings for one or two years after being finished, when the colours are completely hardened and mellow. Mastic varnish is the only one which can be removed at pleasure, and for that reason is generally preferred to all others, although it is very liable to chill; that is, it becomes all over of a bluish steamy hue, which obscures the beauty of the painting, and appears disagreeable to the eye. Many circumstances contribute towards causing it to chill; for instance, varnish made from weak, unripe gum mastic and common spirits of turpentine will chill, particularly if applied on new paintings, where the grounds, oils, and colours are fresh, soft, and absorbent. In order to prevent this, if possible, employ no varnish but that made from fine, ripe gum mastic and rectified turpentine. Varnish for oil paintings, after being properly made, ought to stand for at least twelve months in large wide-mouthed glass bottles, without a cork, covering the mouth with a piece of glass, so as to admit the air but prevent dust falling in; place the bottle so as to receive a full light, but no sun. The light and air so change and modify the essential quality of the turpentine, that the varnish becomes elastic, clear, and brilliant, having so much improved during that time as seldom or never to chill or become steamy, and by age it loses that attraction

which all new-made varnishes possess for moisture and impure exhalations. Therefore, as a preventative against varnish chilling, employ none but good old varnish; never apply it on new or old paintings until properly cleaned, and well dried from moisture; apply the varnish in a warm room, where the painting and varnish also receive a proper warmth; after the varnish is applied, let it remain until properly dry; recollecting that with all new painted pictures, where the grounds and colours are soft and absorbent, and where the pictures are afterwards exposed to strong moist exhalations, the varnishing in time will chill; but when paintings are properly cleaned and varnished, and afterwards hung up in dry rooms or galleries, there is no reason to fear their chilling.

To Preserve a Scaling or Cracked Picture.

The preparation is a mixture of equal parts of linseed oil and methylated chloroform, which is to be poured over the painting if the colours are too brittle to bear the friction of a soft brush. After remaining on the surface of the painting for a day or two, the excess of oil may be removed by means of a piece of cotton wool or a soft brush, a fresh portion of the preservative applied, and the excess removed as before. The process must be repeated from time to time until the colours are firmly fixed, when the painting will bear friction, and may be submitted to the cleaning process or varnished. It is advisable, however, to remove as much of the dirt as possible from the picture by careful washing with soft water previously to the application of the fixing agent. The mixture will not restore the cracks in a painting, but simply fixes the colours, and renders the painting very elastic. A mixture of one part of methylated chloroform and two of linseed oil is used for reviving the colours of paintings. A small portion is rubbed over the picture, after washing with

cotton wool, and on the following day the painting is wiped over with a soft silk handkerchief. Oil and chloroform, when used in the proportion given, possesses the property of restoring the faded colours of paintings, and develop colours which have perished, to the eye, by age.

Cracking of Paintings.

There are various causes for the cracking of pictures, which, simple as they are, are not, it seems, too well known. The prevention is simple, but the cure is not so, as it involves the absolute necessity of re-lining a work, and most probably some most difficult re-touching. In small pictures on canvas, the cracking alluded to consists of an entire margin some 3 in. in width, surrounding the whole picture; and in large pictures of a similar margin of greater width, with one or two transverse bars, which cross it in two directions at right angles. These are all the result of permitting the canvas to become slack, which allows it to vibrate against the entire inner edge of the strainer and its transverse bars, producing a crack, if anything, still more unsightly than the varnish crack, from the uniformity of its figure. This crack, unlike the other, has a double pouting lip, standing above the level of the canvas, and refuses all compromise between entire re-lining and being left alone in all its rectangular and pouting beauty. The prevention is easy, and consists in turning the picture—say twice a year—and gently tapping the wedges until the picture becomes sonorous, and emits a tone somewhat like that of a dull tambourine. There is no gallery of pictures superior to the necessity of having this simple operation performed occasionally. The writer—who prefers to paint on canvases and grounds of long standing—appoints his son to the office of tambour-major, whose duty consists in keeping the whole of the canvases—finished and

unfinished works—in perfectly musical condition, the large ones forming the bass, and the small ones the treble. There is another crack rife in many pictures, the cause of which has puzzled most inquirers, and the writer amongst them. It occurs in an irregular volute of spiral form, and he suggests that it may be the result of some minute animal ova deposited by way of secrecy on the hidden back of the canvas; and that the gluten or albumen accompanying the deposit may produce the crack by its contractile power. He also imagines that the fact of one particular gallery having entirely escaped this and other cracks is due to the circumstance of there being attached to it a tambour-major, and from the canvases and pictures being frequently turned, dusted, and brushed at the back, and then put into correct tune by being tapped or wedged out. This last crack also has its edges turned outwards poutingly, and if ever intended to be painted over—as is always the case with canvases and unfinished pictures—requires to be first varnished at the back several times, in order to stop the absorbency of the opening crack, the thirst of which is hardly to be assuaged by less than from four to six coats of oil-colour on the surface.

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COLOUR.—We do not study sufficiently the art of colour; and by this neglect the effect of much expensive work is not effective. One or two colours should be dull, and not too pale; this is not generally known, or it is forgotten, and the result is the coarse and vulgar contrasts that we see around us. Blue is a favourite colour, yet it is rare in nature; there are but few blue flowers; there is no blue in the human race; blue eyes many fancy they possess, but a clear blue is the rarest thing in nature. Green is becoming in itself because it annuls any tinge of green which may be latent to the complexion. Deep, heavy reds are much used by the old Italian artists for drapery, but they need to be contrasted, as it would be difficult to do in dress. Yellow is an unjustly despised colour; it has many beautiful shades, and only when too pure proves unmanageable. A brownish-yellow is more suitable for elderly persons. A brunette should wear a green yellow. Pale green is trying to the majority of faces.—*Oliver Optic's Magazine*.

PICTURE FRAMES

AND THEIR MANUFACTURE.

HOW many, on becoming the happy possessors of a good picture, engraving or water colour, have not ardently wished to be able to frame the work of art in such a manner that it would be fit to hang up in a good room, and pass under the eye of the critic without remark.

We hope in the following pages to give such information as will be plain to those seeking amusement in the practice of the art of making picture frames, as well as to those who wish to make it a trade.

By care and attention great difficulties are overcome, and to those who do not succeed as well as they could wish, we would say, "Try, try again."

In the first place allow us to remark, that without a good edge on your tools you must not expect to produce good work. Try, not how much, but how well you can do the work in hand, when, with practice, you will find that you will not only do it well, but get over a considerable amount in a short time.

You will have many kinds of wood offered you to work on, and it will be expected that you will be able to make as good

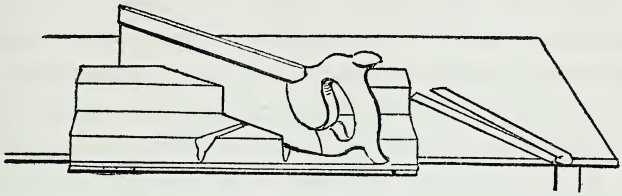


Fig.5

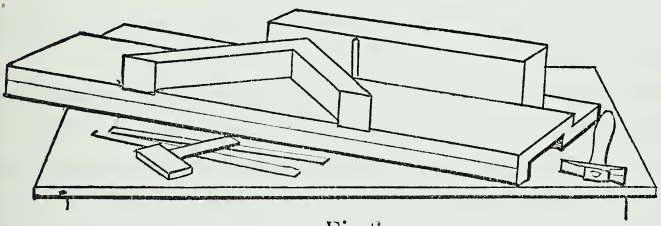


Fig.6

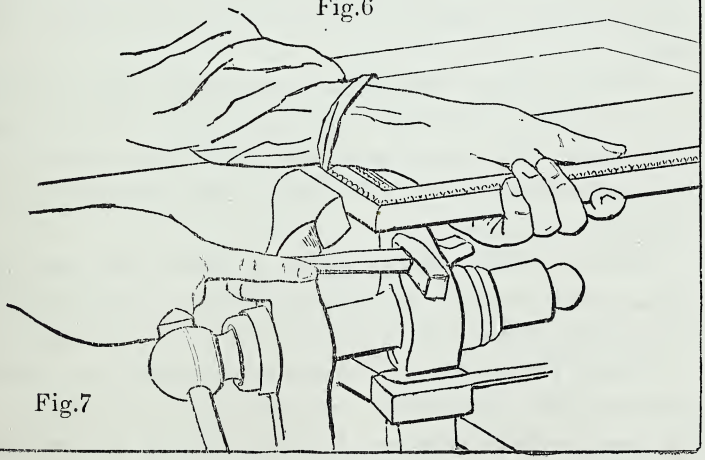


Fig.7

work with the hard woods as with soft, and sometimes you may not succeed as well as you may wish, but oftentimes difficulties are overcome which at first seem insurmountable.

As in many other things—making and mitreing mouldings, mounting pictures, cutting glass, &c., requires care as well as skill, and a careless workman will spoil as much material and waste as much time as he is worth; therefore make it a rule to be as careful as possible under all circumstances, when you will not have to reproach yourself, if an accident occurs, with carelessness.

Tools Required.

The tools required by the picture frame maker may soon be enumerated.

Mitre Block.—This block is made to guide the saw in cutting up mouldings. It consists of a thick piece of wood glued on a good bottom, with saw cuts in it at an angle of 45 degrees, so that the moulding, when cut off, will form a square frame. Eighteen inches long will be found a convenient length. See fig. 5.

Shooting Board.—This board is made with a ledge screwed on at an angle of 45 degrees, and a flat run for the plane laid on its side. The use of the shooting board is to "shoot" or plane the ends of the mouldings, to bring the mitres close together. See fig. 6.

Shooting Planes.—Planes about 15 inches long, and 3¼ wide, without handles, the plane iron without a guard, used for shooting the ends of the mouldings on the shooting board.

Saws.—Those used for cutting up mouldings are called tenon or back saws, and are supported at the back by a piece of brass or iron, to prevent the thin blade of the saw from bending.

Hammers, various sizes, and not too heavy.

Chisels, different widths; *Brad-awls* and *Gimlets*, various sizes.

In addition to which a few small tools, such as pincers, scissors, punches, squares, &c.

There must also be cut brads, from half-an-inch to three inches long, picture rings of all sizes, nails, screws, &c.

Glue is also used, and as its strength is dependent upon quality, we will give a little information upon the subject, as the strength of the work is only secured by a good article.

Glue.

Glue, an inspissated animal jelly or gelatine, is principally prepared from the parings and waste pieces of hides and skins, the refuse of tanneries, and the tendons and other offal of slaughter-houses. These should be carefully preserved from damp, being very liable to decomposition. When required for use they should be steeped for about fourteen days in slaked lime mixed with water, and then drained and dried. Before being converted into glue, the materials are generally steeped in weak milk of lime, well rinsed in water, and exposed to the air for twenty-four hours. After this they are placed in a copper boiler, two-thirds filled with water, and furnished with a false bottom, perforated so as to prevent them from burning, and as much piled on as will fill the vessel. Boiling is continued until the liquor, on cooling, forms a *firm* gelatinous mass. The clear portion is then run off into another vessel, where it is kept heated by means of a water-bath, and allowed to repose for some hours to deposit, when it is run into the congealing boxes and placed in a cool situation. The next morning the cold gelatinous masses are turned out upon boards, wetted with water, and are cut horizontally into thin cakes with a stretched

piece of brass wire, and then into smaller cakes with a moistened knife. These cakes are next placed upon nettings to dry, after which they are dipped one by one into hot water and slightly rubbed with a brush wetted with boiling water, to give them a gloss; they are lastly stove-dried for sale. During this time the undissolved portion of skins, &c., left in the copper is heated with fresh water, and the whole operation is repeated again and again, as long as any gelatinous matter can be extracted. The first runnings produce the palest and best glue. In applying glue, the hotter the glue the more force will it exert in keeping the united parts together; it should therefore be applied immediately after boiling. Glue loses much of its strength by frequent re-melting. Glue should be purchased in dry weather, for that which is then soft is not of so good a quality as that which is crisp. The most transparent is the best. Good glue, if immersed in water for two or three days, will not dissolve, but swell; if of inferior quality it will partly or wholly dissolve. Again, that glue is the best which, being dissolved in water by heat, may be drawn into the thinnest filament, and does not drop from the brush as oil or water, but when falling extends itself into threads. Glue made from the skins of old animals is much stronger than that of young ones.

Paste.

Mix one tablespoonful of wheat flour with half-a-pint of cold water, adding the latter gradually, and thoroughly stirring in each portion before pouring in more; place the vessel over the fire and stir the whole assiduously until it boils; great care should be taken to prevent caking or burning on the bottom. An addition of half-a-teaspoonful of powdered alum will strengthen the product. The addition of a few grains of corrosive sublimate, or a few drops of creosote, will prevent it from turning mouldy, and keep insects away. When too hard or

dry, it may be softened by beating up with a little hot water. Any quantity can be made in the proportions mentioned. The thin skin formed on the surface of paste may be prevented by covering it up till cold.

Mitreing Picture Frames.

In order to obtain instruction in the art of making picture frames, we will go into a shop where the frames are mitred together, fitted up, and turned out to be hung in the cottage or hall, and where all the frames from the gilder's shop adjoining, come to be made and fitted up. As we see two or three very busily engaged in various occupations, we will not interrupt them for the present, but take a critical survey of the shop. It is lighted by windows on two sides, and a stout wide bench runs under the windows round two sides of the room. At certain distances we see bench vices fastened, at some of which are men busily at work. Down the middle of the shop is another wide bench, and on it we see rolls of engravings, and some are fitted into frames. At the end of the room is a small circular saw driven by the foot, and on the opposite side of the shop a good stock of mouldings are arranged on bars let into the wall. We see four or five sizes and qualities of O.G. maple, a variety of patterns of inside slipping, beads, &c., in German mouldings, and a good stock of mouldings in the white ready to be joined before going into the gilder; also gold mouldings packed in white paper.

In a room adjoining this shop a man is seen busily employed packing a lot of pictures in cases ready to be sent out. The occupations of the men are various, and a division of labour seems to be the order of the day, as we see one actively employed in joining a large lot of maple frames with a number down by his side; another is "shooting" the moulding, while a third

is cutting up mouldings. But we see a man in the centre of the shop looking over a book, and as he has a good-natured open countenance, we will draw near and see what he will say to us in answer to inquiries as to what his occupation generally is. He informed us that he is constantly employed in "fitting up" all the best of the miscellaneous work, and that in consequence of his work requiring great care, he does not get through so much. He fits up the gold frames finished in the gilder's shop with expensive chromos, proof engravings, oleographs, and oil paintings; he also fits up the best work in water-colour drawings, and is trusted with proofs and pictures to mount, some of which are worth as many guineas as there are days in a month.

He informed us that he was called a "fitter-up," and that it was not his work to make frames, although he might be able to do so. As he had satisfied himself as to the work in hand, he was about to hand the book over to a man in another room who did "mitreing-up," and he offered to show us the way.

Our friend, the "fitter up," was not aware we had been engaged for a number of years in gilding, and in a fine art repository, so treated us to a sight of some of the best chromos, little thinking they were old acquaintances, and that we had times before taken a pride in turning them out as he would do —first class.

We were received by the man about to execute the orders in the book, with civility, and he looked superior to the general class of men engaged in the trade. As we stayed with him some time we will describe the execution of the work required.

"Frith's Derby Day" was wanted at once, and he set to work to cut out the mouldings and mitre them up. It was to be framed in the best O.O.G. maple, with a broad gold flat and hollow inside, and the picture mounted on a stretcher. The sight edge of the inside gold, to allow of the requisite margin,

must be 57½ by 29; and, unpapering some broad gold, flat and hollow, he carefully cut out on the saw block four pieces a little longer than the required length, to allow of "shooting." He next selected some of the best maple, O.O.G., and cut one end off on the saw block to the required angle. He next took one of the pieces of gold flat and hollow, and placed it on the rabbet of the maple, and marked the length a little beyond the gold flat, and cut off the length. This he did with the three other sides. The "shooting board" was next required, when he placed first the maple in position, and, with his plane, which had a good edge, took off enough to secure a good surface, and in the next place a clean top edge to the mouldings. The next piece selected for the same operation was the piece corresponding in length, and after planing to his satisfaction, he measured the two pieces by putting the two sight edges together and making them exactly of a length.

Before shooting the gold flat and hollow, he said he should put the maple together, so that they could more easily make the mitres in both to run straight.

Taking the four pieces of moulding, he went to the bench vice, and fastened one of the long pieces therein with the rabbet outside, and the right hand end very near the jaws of the vice. He next took up one of the short lengths in the left hand, and placed the two ends together. The two pieces were not placed exactly together, but the piece in the left hand was brought back from the sight edge about one-twentieth of an inch. When he had satisfied himself as to the exact position, holding the two tightly together, he, with a brad-awl, decisively made a hole long enough to go into the moulding in the vice. When this was done, he enlarged the hole in the piece he held by a gimlet, so that the size cut brads would drive easily through it without much friction or danger of splitting the wood. A little thin

glue was then applied, and the moulding placed together as before, holding it very tightly together, when a brad of the requisite length, about 2½ inches long, was inserted and driven home. In driving home the brad the moulding held by the hand was found to have moved forward a very little by the force of the blows, and thus a capital mitre was made; a second brad was then driven home and both punched below the surface. Had the brad been driven home with the mouldings exactly level, such a good mitre would not have been the result.

The other two pieces were then joined in the same way.

Two mitres having been made, two more remained to be put together. He then took one half of the frame and fastened it in the vice near one of the unmitered ends, and with the assistance of a lad on the other side of the bench he brought the two joined pieces together in their proper places, and with the brad-awl and gimlet made the hole as above described; he then took the half out of the vice and put in the other half in the same way, and made the hole in the fourth mitre. He next glued the two ends of the piece out of the vice, and with the help of the lad brought the two halves together, and quickly and steadily drove home the brad. The frame was then taken out of the vice, and the other mitre attended to in the same way, and a second brad inserted, and the two punched below the surface, The frame was again put in the vice for the third mitre to have a second brad driven in, when both were punched below the surface, and the frame was found to be well and neatly put together. Rather thin glue was used, and he was careful not to put on too much, so that it would appear on the top of the mitres. See fig. 7.

Having so far completed the maple frame, he at once proceeded to mitre up the inside gold flat. Before taking it in hand he put on his left hand a glove made of chamois leather,

explaining at the same time that in shooting and mitreing up gold mouldings, some of which were gilt down to the back edge, it was necessary to protect the gold from the heat of the hand, as inattention to this would be sure to damage a frame which was expected to be turned out in the best manner. He said also that a piece of soft cloth was glued down on the shooting board, to prevent any scratches on the gold, and that he was particular to keep it free from shavings and grit.

After seeing well to his plane-iron, the gold flat was soon ready for mitreing, and it was noticeable that he was very particular to get the length of the pieces, so that the frame would just take half of the rabbet, and the mitres by that means would range exactly. With his left hand still covered by a glove, he handled the moulding and mitred it up in the same way as before mentioned for the maple frame, and when completed the mitres looked like a hair across the corners.

He next took the rabbet measure of the frame just mitred, and at once proceeded to cut out a stretcher from a large number of lengths of deal cut ready for the purpose.

In marking out the stuff for the stretcher, he explained that there was no waste as in the ordinary moulding, as the length was cut from one side and the other, avoiding the cutting out of the triangular piece necessary to make the mitre. He also informed us that he knew it was the custom in many country shops to make a stretcher by halving it together, but that a mitred stretcher was stronger, more expeditiously made, and was much neater than those made in such a way.

He then "shot" the lengths as usual, and soon put them together in the vice as before described, and fitted it into its place in the rabbet of the gold flat. The three frames placed one in the other were ready to go in to the fitter up.

Sometimes with O.G. maple, the lengths are found to be

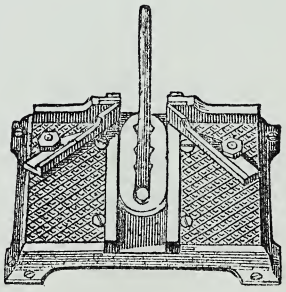
warped, and when cut into the required lengths by the picture frame maker and made up, the frame is found to be twisted and the mitres bad. Mouldings should be kept flat before they are used.

Where gold mouldings are gilded down the back edge, it will be necessary to lay in the vice some slips of wood covered with cloth, to prevent marking the moulding.

We have described mitreing up a large frame, but smaller ones will not require the gimlet to be used before joining, as there is not the danger of the moulding splitting where small brads are used.

Gilt slipping for the inside of maple, rosewood, oak, or other frames, requires care in mitreing up, owing to the thinness of the wood. Sometimes the wood will split, therefore the brads selected must not be too large, and the mitred pieces must be handled tenderly till the glue is dry. Where it is twisted or warped it is almost impossible to make a neat mitre, which is often the case with German mouldings.

There is a very good mitreing machine suitable for picture frame making in use in many shops, which does the work very well.



Mitreing Machine.

To Amateurs.

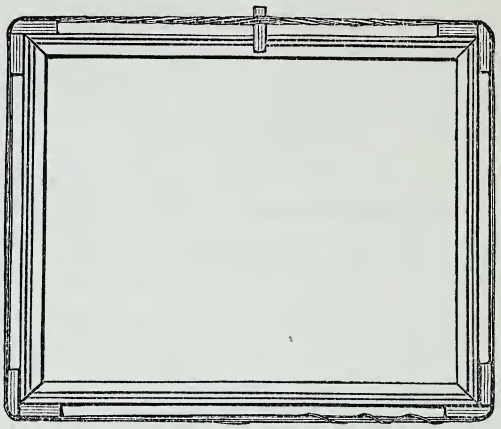
By the following method the amateur will be able to succeed in producing some creditable work, although it is not in use in shops where frames are made wholesale. There is no reason why he should not be able to make frames as described, but the following may be adopted if preferred.

With the saw and mitre block before him, he will take a length of the moulding and cut off the end the right way of the mitre, and if the "sight measure" of the frame in hand is 14 inches by 18, measure off at the sight edge of the moulding 18 inches, and cut it off about one-sixteenth longer, to allow for "shooting;" next, cut the end off the moulding previous to measuring for the next bar; measure 14 inches, and cut off a little longer, as before, and in the same way, for the two remaining bars of the frame.

The next operation will be to "shoot," as it is technically called, the ends of the moulding, so as to make it fit close. The plane must have a good edge, and not too much "set," and laid on its side on the shooting board, as seen in Figure 6. Take a piece of the moulding and lay it on the board, keeping it firm and up to the plane iron by the left hand, while the right works the plane. Three or four strokes are usually sufficient to give a clean edge and surface to the end of the moulding. Proceed in this way till the eight ends are all smooth, when the frame is ready to be put together.

Have four corners ready made. Lay the four pieces of moulding together, and place the corners at the mitres, and, with a piece of medium size string, tie it round. It will not require to be very tight. Then insert a slip of deal in the cord and twist it round two or three times, and let the slip rest on the frame.

The engraving below will better explain it than any description could do.



By this method almost any amount of pressure can be given to the four mitres, and it can be seen at a glance if either of the mitres could be improved by taking a shaving off at the shooting board. If the mitres are satisfactory take out the slip of deal from the string, when the frame will be loose enough to take out one of the bars. Glue with thin glue both ends, and again insert the piece, and also the bar on the opposite side the same. Insert the slip of wood as before, in the string, and give it one turn. You can now set the mitres of the frame to a hair's breadth. Give the slip of wood another turn or two, and the frame will be neatly put together. Sometimes the frame will twist, that is, one corner will be higher than another; this can easily be remedied by rising the string on one corner and lowering on the opposite, when the frame will be found in its place. When the glue is dry take off the corners and string, and with a fine saw, make a kerf in each corner at the back edge, and glue in four slips of veneer as keys. When dry,

cut off the slips of wood, and the frame will be strongly put together, and will be finished so far.

This method takes a little more time than that practised in frame shops, but to an amateur he will be sure of success every step he takes.

Larger and heavier frames can be made in the same way by using stouter corners and string.

A New Joint and Mitre Planer.

We give a front and a rear view of the tool, and diagrams illustrating the kind of work it is capable of doing. The work is placed upon a table, which may be inclined to any required angle with the face of the plane. It is caused also to abut against a pivoted head or stop, which also is adjustable to any required angle. The plane proper runs upon ways formed upon the upper part of an adjustable bed, and by the proper adjustment of these three elements any required angular form is quickly and accurately produced, without measurement of the work, and of the precise size required. The rear view of the planer, shown in Fig. 2, shows the pivoted head or stop, with its graduated scale for forming the different angles desired to 45 degrees. It also shows the attachment of the plane-iron to the plane, by the use of a lever and screw which easily regulate or set, attach or detach, the iron. The thumb-screw above the plane regulates and squares the plate of iron with the face of the plane. The ways, or dovetailed grooves, which guide the movements of the plane on the bed-plate, are also shown. By the use of the thumb-screw, shown at the end of the bed-plate, the latter is lowered so as to use the full width of the cutting plate in planing thin pieces, thus giving to the plane an oblique or shear cut that saves the plane-iron from becoming dull at the bottom, while the portion not in use still remains sharp.

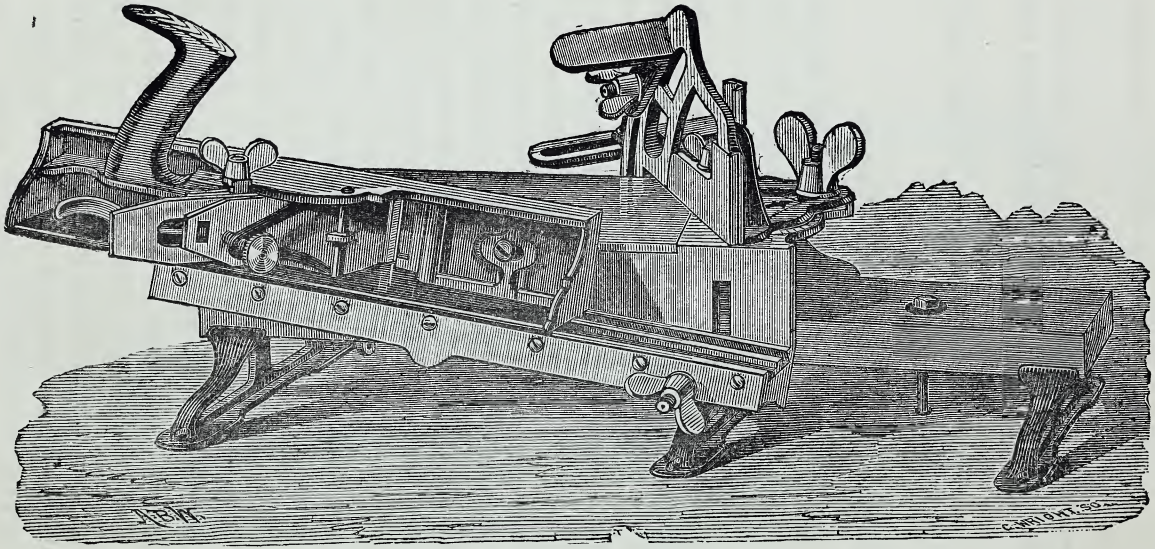


Fig. 1.

This bed-plate is provided with a compensating gib, by which any or all of the running or sliding part of the plane is taken up.

In Fig. 1, the front view, the adjustable table upon which the piece to be worked rests, is shown directly in front of the plane. This table or plate may be elevated to any required angle by the passage of the slide links or bars pivoted to the

table over the iron rod in front, and when adjusted to the proper

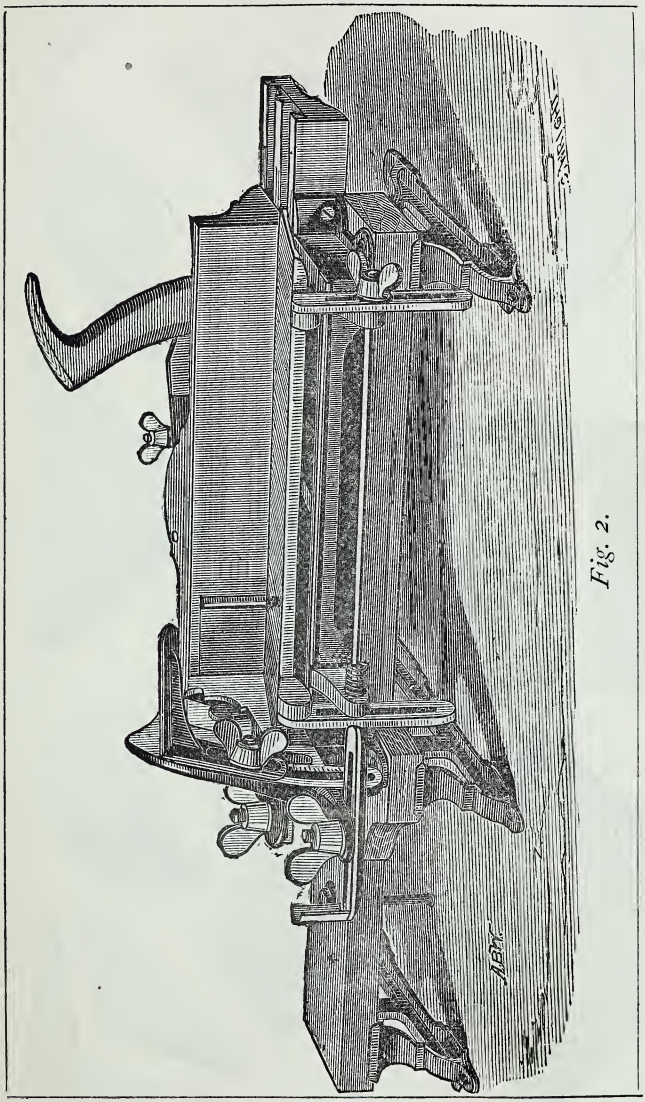


Fig. 2.

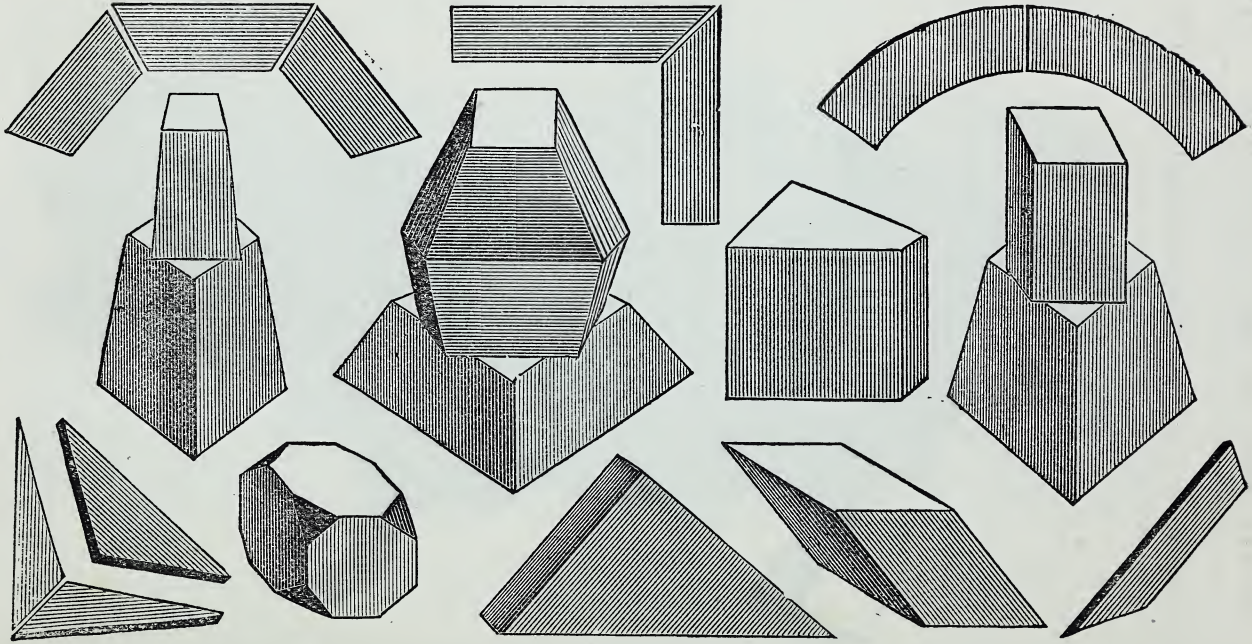


Fig. 3.

angle may be securely held by tightening the thumb-screw at the end of the rod. The long, flat piece in front of the pivoted head is a slide-bar or rest, used in finishing long pieces of work and making sections of a circle for the rims of wheels or pulleys. It is held by the use of a thumb-screw, and when not in use is folded back out of the way.

The small adjustable piece working in the front circular slot serves as a support for lengthy pieces while mitreing the end, and, when reversed, steadies or securely holds any shaped moulding, either side up, in its position for mitreing, while it rests on the face-plate or table below; when not in use it is slipped down to the end of the slot, out of the way. The long bolt at the end of the table is used in fastening the planer to the bench, that it may be instantly changed to any position desired to suit the convenience of the workman. It would be a capital tool for an amateur, as, besides mitreing, it would do other work. Mr. C. H. Savory, carver and gilder, Caxton house, Cirencester, would supply it.

Veneered Frames.

The practice has obtained largely in England to use mouldings covered with veneers of mahogany and other ornamental and expensive woods. The general form or groundwork of the frame is made of pine, in the same way as if it was for gilding; and the fancy wood is glued upon the surface of such ground. The process of glueing the veneers on the deal or pine is a species of cabinet work, and requires equally as much care. This is especially the case when the shape of the moulding is that of an ogee, in which the veneer has to be bent into a double curvature. Generally speaking, veneered mouldings are either flat or bevelled; but when they are of the ogee form, the veneer is very liable to start or spring up from the foundation, unless

laid on with great care. The veneers are first cut to the proper width, and are sponged with hot water, to render them somewhat pliable. The moulding which is to receive the veneer is made pretty warm before a fire; the moulding and the veneer are then covered with hot glue, and the veneer is laid on the moulding. Two pieces of similar form are done in this way at the same time, and then laid face to face, by which each one acts as a sort of press to the other, and the two are confined firmly together by screws until the glue is dry.

When the veneer is thoroughly dried, it is trimmed at the edges, &c., and afterwards polished.

In frames made of these kinds of polished wood, there is generally a small inner moulding or beading, which is gilt, to give a relief to the general appearance of the frame. This gilt moulding is prepared by the gilder in the same manner as other specimens of his workmanship, the joiner having nothing to do with the gilding of it. This moulding is fixed by the joiner into a small groove made on purpose to receive it, in the inner edge of the polished wood moulding, and is generally done before the moulding is made up into a frame.

The outer edges of these polished wood frames are sometimes veneered; while at other times they are made either black or yellow. The black is produced by staining the wood black, and then rubbing it with black wax, which, after being well worked over by a piece of cork, and afterwards a piece of woollen cloth, presents a tolerable polish. The yellow employed for the outside is produced by a mixture of parchment size and Oxford ochre, which is laid on, while warm, with a brush.

For cheap purposes, black or black and gold frames are frequently used. Frames of this description were very prevalent during the last centnry. The foundation was made of deal; while the part which was to be moulded by the plane was made

of pear-tree wood, which admits of a fine smooth surface.

The pattern most generally adopted for black and gold frames at the present day is a series of reeds, terminated on the outside by a fillet, and on the inside by a gilt hollow. The hollow is inserted into a groove after the other part of the moulding is stained and polished. A superior kind of black frame is now sometimes made by veneering with pear-tree wood, in the form of an oval or ogee, and then staining it. But instead of polishing with wax, French polish is employed, as for fancy goods; the result of which is a lustre and smoothness of surface equal to the highest black japan polish.

Circular and oval frames are now so seldom employed for pictures and glasses, that it is hardly necessary to treat separately of them. When required, they must be the work of the turner. When mirrors were in fashion, the frames for them were necessarily made by the turner; but those articles are now almost out of use. A great number of the old prints and drawings produced by European artists about half a century ago, were of an oval form, and accordingly required oval frames. Sometimes the outer frame was square, as if for a square picture; and between the picture and the frame was placed a *spandril*, which consists of a flat frame, oval on the inner edge and square on the other. These spandrils are very frequently used in framing miniatures on ivory, which are often of an oval form. —*The Cabinet Maker.*

Oxford Frames.

These frames have become favourites within the last few years. They are made of oak, with cross corners, and are made up in fancy patterns, some of which are finished with ultramarine on the bevels. They can be had of the wholesale houses of the following sizes:—

4¼	in. by	3¼	in.	16 in. by	14 in.
7	,,	5¾	,,	18 ,,	16 ,,
8	,,	6½	,,	21 ,,	14½ ,,
10½	,,	8½	,,	23 ,,	18½ ,,
12	,,	10	,,	29 ,,	21 ,,
14	,,	12	,,		

They should be rubbed over with linseed oil, which will give the wood a richer appearance.

The amateur, with a little instruction, will have no difficulty in making Oxford frames, as it will be a pleasing occupation. These frames have not been introduced a great many years, but obtained the appreciation of the general public very quickly for sacred subjects. They are principally made of oak, and sometimes the corners are carved a gothic pattern. For a drawing-room, this style of frame looks well in gold, with the bevels burnished. Oxford frames are suitable for sacred subjects, mottoes, views in the Holy Land, &c., but are used for portraits, and many other pictures look well in them.

It requires but little skill to make these frames, and we will give the necessary information that will enable anyone to manufacture them. But few tools are required, and those principally in use are—a saw, chisel, plane, and gauges generally found in an amateur's work-room. The bars of the frame must be first sawn out of a board about an inch thick, and the width of the bar must be regulated according to the size of the frame; if you wish to make a frame with the sight measure 6 by 4, a suitable width for the bar would be three-eights of an inch, or 12 by 10, or 15 by 19. These frames do not look well with a thick heavy bar. Then, according to the size of the frame required, mark the board with the gauge, and cut out the strips. The four strips must be accurately planed up on all four sides, when the next thing is to properly halve the frame together.

Bring the four bars together the narrowest way up, and even at one end, and, with a pencil and square, mark the four pieces across, leaving sufficient for the protruding corners, then, according to the width of the bar, another line must be carefully struck; now, if your size is to be 12 by 10, you must measure the long bar for 12 inches from the inside mark on the other end, and the short one for 10 inches. Be careful in bringing the measures exactly opposite, and, with the square, strike a line across the four bars, and also another line the width of the bar as before. Carefully with a small saw go through each bar, as marked, *about half way*, and then with the chisel split out the pieces. The bars of the frame should drive home *tight*, and fit well on the surface. The saw cut had better be a little too small, so that a shaving taken off by the chisel would be better than having a loose fit. Having fitted the frame together, take it apart and set the gauge, and mark for the bevels on the front of the frame, and also gauge the sides to keep the bevel even. Also gauge for the rabbet, and with a *cutting gauge* cut the width of the rabbet into each bar, and also the depth. To cut the bevels, use a very sharp chisel, and by using the gauge marks as a guide it will be found there is but little difficulty in cutting clean sharp bevels, which greatly add to the appearance of the frame. As the *cutting gauge* has been used for the rabbet, but little difficulty will be experienced in getting it out. On no account use glass-paper, as it would take off the sharp edges of the bevels left by the chisel. Put the frame together again, glueing it up, and make the black nail heads out of ebony or black wood, and glue on, when it will be finished. There are iron nails now made with square heads for this purpose, as well as ornamental cross corners as brass-headed nails, but the sharp angle of the black wood looks much neater.

Imitation Carved Oak Frames.

These frames may be made to look very effective with a gold inside, and are suitable for historical engravings.

They are made up from mouldings in the white, and mounted with composition ornaments and backed up as if for gilding. After a coat of thin white, they must be glass-papered down, and then coated with a mixture of Venetian red and white. Black Japan thinned down with turpentine is then laid on, and combed for oak grain. Two coats of oak varnish will be required to finish the work. If a woody grain is required, mix chrome yellow with the colour.

Corners on German Frames.

On frames made from the best German mouldings, composition corners, gilded, look very well and will wear well. When the corners are ready it will be necessary to scrape the corners of the frame down to the whitening, or the ornaments when glued on and backed up, will peel up. After backing up, gild in oil. We have seen brass corners on German frames, but they would look much better without any ornament than such unsightly things.

—o—

PICTURES properly belong to the furnishing of a house, though they are often regarded as ornaments of secondary importance.

Pausing for a moment to consider the subject, it will strike one, that no matter how rich the ordinary furniture of a room may be, if the walls lack pictures, there is a dreariness about the place that is anything but pleasant. Frescoes and elegant wall-paper cannot take the place of pictures. Even draperies, the most elegant adornment that can be used, will not fill the blank. Only pictures will suffice. The selection is more important than that of sofas and chairs, and should not be made in haste. It may take years to obtain the right kind, and even then it is not supposed that everyone can have the best Raphael, Turner, or Millais. These are not to be had for the asking. Many good pictures, however, can be had at a moderate cost, which serve for the principal rooms until better ones can be obtained.

MOUNTING PICTURES.

A PICTURE badly mounted is oftentimes a source of annoyance to its possessor, and spoils what might be otherwise a good subject. A picture of little value, if neatly mounted, really looks more superior than one of greater value where little care has been bestowed upon it.

Engravings, chromos, photographs, and oleographs, each require to be treated in a different manner, to make them look well and preserve them in good condition for a great length of time.

Engravings.

If it is an ordinary engraving it will be best to prepare a stretcher as before recommended, and strain evenly thereon a piece of calico by means of tacks round the edge. The tacks should not be too wide apart or the calico will not be so firm.

The engraving is laid on the bench face uppermost, and the edge of the stretcher laid across it from one edge of the picture, when, with a rule, the width of both margins can be ascertained. By halving this the exact width of margin can be seen, and by marking the picture in two places on each side a straight edge can be used and a line drawn where the picture must be cut. The margin on the top and bottom of the

engraving can be easily decided, as the top must be measured off the same width as the sides, and the bottom can be marked by putting the edge of the stretcher on the top line and marking the picture by the other edge of the stretcher.

The engraving, when cut, is now just the size of the stretcher.

On a good smooth surface, sheets of clean paper should be laid, and the engraving turned over on its face. With a clean sponge and water, go over the back of the picture till it has absorbed almost as much water as it will take, when, after lying in the water a short time a good coat of paste must be laid on very evenly, taking care that it contains no particles of grit. The stretcher must be evenly laid on and well rubbed down by the hand over the calico at the back of the stretcher. The picture now on the stretcher can be turned up, and with a clean sheet of paper in the left hand, laid on the outsides of the picture, and rubbed well down on the stretcher.

Should there be any grit under the picture, which will be easily seen by the unevenness of the surface, it would be advisable to pull up the picture from one corner and remove it. If there is any dirt on the margin, now is the time to see to it, by applying the sponge with clean water, or it will not be removable when dry. Stains must be removed before mounting. The frame should be ready to receive the stretcher, and it should at once be tacked in and stood upright to dry. If not tacked into the frame the stretcher will twist with the drying of the picture.

If the engraving be on India paper it will not be advisable to damp it too much, nor let it lie in the paste, but proceed as quickly as possible, as the India paper sometimes comes up, when it is a difficult matter to lay it again properly.

Many other pictures are mounted in the same manner as

before mentioned; but where it is an old engraving, stained and discoloured, it will be quite necessary to clean it before mounting.

Where gilt slipping is laid in a maple or other wood frame, the stretcher may be omitted by mounting the picture on the inside slipping in the following manner:—The picture must be well damped with a sponge and clean water. The frame made of slipping must be well glass-papered down on the back, glued and laid on the picture in its proper place and well rubbed down. When dry it will be found to be well stretched, and the gilt will go under the glass. It should be tacked in the frame to dry, and when fitted up, a backboard used. This method is not suitable for large pictures.

Proofs.

Sometimes valuable artists' proof pictures come into the hands of the picture frame maker, with special directions as to their mounting, &c,, and many gentlemen are most particular not to allow the fine lines of the engraving to be touched, and on no account pasted on the back.

When this is the case the proof must be carefully measured up for the stretcher as before mentioned, and marked on the back, but not cut. It must then be turned on its face on soft tissue paper, and moderately damped with clean sponge and water. The stretcher, covered with paper, must now be laid on the back of the proof in the place where it is meant to be mounted, and the outside edges must be glued and turned over on to the back of the stretcher, and well rubbed down and tacked into the frame. It will dry, and present a well-stretched picture, and the paper will prevent the wood the stretcher is made of from staining the paper, and keep the dust from the back. If it is required that the proof should not touch the

glass it will be necessary to have two rabbets to the frame—one for the glass and the other for the picture.

Photographs.

Photographs are usually mounted on cardboard, and the great fault is that the majority are on thin board, and through bad mounting the picture is pulled out of shape, and it is difficult to fit it into a frame to present a workmanlike appearance.

The photograph should first be squared up by cutting the edges with a sharp knife guided by a straight-edge, when it should be put into clean water for an hour or two, and laid between blotting paper for a short time before mounting. Some thin *starch* should then be made and brushed over the back of the photograph very evenly, and laid on the board so as to give equal margin. After well rubbing down with a sheet of paper, it should be laid in a press or under a weight to dry, If it is required to mount a picture with cold starch, it will be found to roll under the brush, and the fingers of the right hand will best rub on an even coat. Newly-made starch is preferable.

Where a cut mount is ordered the photograph may be mounted on cardboard a little larger than the picture, placed behind the cut out mount and pasted in its place with slips of paper.

Water-Colours and Chromos.

Water-colours require careful treatment, as it is not advisable to make them wet by paste, or the colours may be affected. After careful squaring up, the edges should be gone over with thin glue, and laid in its place on the mounting board. If a cut out mount is required it must be placed in front of the mounted water-colour.

Chromo lithographs do not require the care advisable for water-colours, as the colours on the picture are oil and will not readily be disturbed. They may be mounted with thick paste and laid under pressure, and if a cut out mount is necessary the mounted picture must be pasted in its place at the back of it.

Oleographs.

Oleographs are pictures printed in oil colours from blocks to represent oil-paintings, and are mounted in the following manner:—A stretcher is made the size of the picture with wedges at the corners, as in oil paintings. It is then covered with a smooth stout canvas or unbleached Holland, when the picture receives a coat of *thin* glue, the stretcher is laid on the picture, and well rubbed down and left to dry. The stretchers should be stouter than ordinary. After the picture is dry, two coats of parchment size are laid on, and when dry, varnished with mastic.

These pictures are sometimes mounted as chromos with margin, and many subjects look very well.

Maps.

Good calico or fine canvas must be strained on a smooth clean board by tacks, and the map damped with a clean sponge on its back, and then well pasted, taking care that the edges are well saturated. The map must then be laid on the canvas, a sheet of paper on the top, and well rubbed down; when dry, two coats of parchment size must be laid on, and one or two coats of paper varnish. When thoroughly dry the tacks may be taken out and the map squared up with a straight edge and knife, enough canvas being left on the top and bottom to attach to rollers. The sides are then bound with green silk ribbon and the bottom tacked on to a roller, while on the top a moulding is

usually secured. Sometimes the roller is cut in half and the map secured between by screws at the back.

Where the map is in several sheets they must be carefully joined In mounting, and the edges well rubbed down, or the varnish may get under and stain the paper.

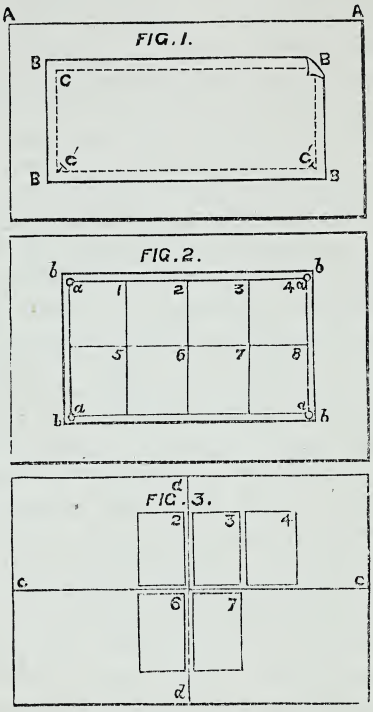
How to Mount Drawings and Tracings.

One of the most common details in the routine of the drawing office, is the mounting and repairing of tracings and drawings which have either been made on paper too flimsy to stand the wear and tear which they will have to undergo, or which are falling to pieces from the rough treatment which they have received in the shops or elsewhere. Like many other minor details, it often fails to receive the attention which, if paid to it, would be amply repaid. It is usually the first task assigned to a new pupil, who, from ignorance of the materials used and of the best method of setting about his work, too often "makes a mess of it." To avoid this, and to save the time which it occupies, it is a very common practice to use "tracing-cloth" for all tracings which are likely to be frequently handled and folded. Every one knows the disagreeable nature of this material. From its "greasiness," as compared with ordinary tracing-paper, a "greasiness" which cannot be overcome by ox-gall. it is difficult to make the ink "lie," and, from its non-absorbent qualities, the lines take much longer to dry and are more liable to be smeared. As the ink lies on the surface, the lines are liable to wash, and any colouring that may be necessary has to be applied on the back or wrong side, and any erasure that may be necessary, or any accidental drop of water, leaves a disagreeable white mark. It is no exaggeration to say that three tracings may be made on ordinary tracing-paper in the time required to make two on tracing-cloth. The method which we are about to describe is not only satisfactory, but very easy, and requires only ordinary care, and no special skill.

Let us suppose that we wish to mount a tracing. We take a drawing-board, which must be perfectly clean and made without glue in the joints, and lay it on a table, or on trestles, if possible, so that we can get at it from all sides. We then take a stout piece of calico, about an inch larger all round than the tracing to be mounted, and pin it down with a tack at each corner on another table, which

we have previously covered with old newspapers. We then lay the tracing face downwards on the drawing-board, and with a soft sponge wet it thoroughly all over. Then, raising first one half of the tracing and then the other, we flood the board well with clean water. The tracing now lies floating on a thin film of water. Then, taking a moist sponge and commencing at the centre, and working outwards towards the sides in turn, we press the tracing down on to the board, driving the water out at the edges. In the same manner we work out all the water from each corner in turn, always working from the centre to the edges, and taking care to leave no "blobs" of air or water behind us, and wiping off all superfluous moisture from the top or back of the tracing. By viewing it slantwise across the light, it is easy to see if this has been properly done. If it is an old or badly torn tracing, we can easily fit any detached pieces, and, as it were, glue them down in their place on the board with the water. If it is necessary to unite two sheets, we first lay down the larger, if of different size, as above described, and then the other, commencing from the point of junction and working outwards. Then, with a stout brush, we spread the paste—which we suppose already prepared—well and evenly over the calico, beating it thoroughly into the interstices of the cloth and taking care to leave no lumps or superfluous quantity, and, if necessary, picking off any bristles out of the brush, &c. Then, taking it by the corners (this is the only part of the operation in which any assistance is required,) and turning it over and holding it at full stretch, we lay it on the tracing, taking care that, as far as possible, every part shall come in contact at the same moment. Once down it must not again be lifted, or it will probably pick up any loose pieces and remove them from their proper positions. Then, with the wet sponge, we proceed to press down the cloth in the same manner as we have previously spread the tracing, driving all the air-bubbles out at the edges and wiping off all superfluous moisture. Then, turning back each corner in succession, as at B1, till we can just see the corners of the tracing, we stick in four tacks or drawing-pins, not to hold it down, but merely to mark the corners- A A (Fig. 1) is the board ; B B, the cloth ; B1, one of the corners turned back ; C C, the tracing underneath ; C1 C1, tacks at the corners. Then, pressing the corners down again, we set aside to dry. If wanted in a hurry, it may be dried, not too quickly, before the fire, allowing at least two hours for this process ; but it is better to allow it to dry slowly and leave it until the next day. When dry, cut with a sharp knife from tack

to tack, and the tracing will fall off. If the paste is good, it will be easier to split the paper than to tear it off the cloth. The remaining



strips of cloth may then be torn off the board, and the board washed free from all traces of paste for future use.

It might be supposed that the colouring would run, and the lines be found all blotted and blurred after such rough usage, but such is not the case. Indian yellow, if laid on too thickly, will occasionally run, but not to a serious extent, and heavy lines of Prussian blue would probably be found printed and reproduced on the board, but not blurred or smeared. But the best plan, if a very neat appearance is a *sine quâ non*, is to colour the tracing after mounting. The tracing will be found to have a surface for colouring far superior to the best drawing-paper, and as all superfluous ink has been removed by the process, lines and figures may be washed over in the most careless manner without any fear that they will run. Those who

know the care required to wash over a heavy dotted line, will fully appreciate the advantage.

The absence of all distortion is a most remarkable feature in tracings mounted as above described, and may be readily tested by applying a straight-edge to any line. Any expansion or contraction is equal in all directions, and may be almost entirely obviated by a careful adaptation of materials. Very thin tracings should not be mounted on very thick cloth, or *vice versa*. It will also be found that some tracing-papers will expand very much more than others, and, as is well known, will, if left free, contract upon drying to less than their former dimensions. But this tendency is counteracted, not only by the fact that the tracing remains stretched on the board until dry and cut off, but by the fact that the cloth will not contract upon drying, especially if the paste is well beaten into the interstices.

So far, we have described the process as applied to thin tracings, but it is equally applicable to torn drawings upon thick paper and to drawings made on the commoner sorts of drawing-paper when it is not thought worth while to employ the superior qualities which are sold ready mounted on cloth. By soaking old and valueless drawings and tracings in water for a few hours, the cloth may easily be peeled off and used again. If it is desirable to leave a margin wider than that on the unmounted tracing, the cloth may be detached from the board where it adheres at the edges by using an ivory paper-cutter or a feather-edged scale. If small parts of the tracing have been torn out and lost, the cloth will, of course, adhere to the board at these points, and must be carefully detached in the same manner. If desired, stout paper may be used instead of the cloth, though not so good or so easily applied. Of course, white calico must be used, as unbleached cloth shows an unsightly colour through the tracing. If any corrections or erasures should be necessary, we recommend the following plan :—To take out a line, fill a drawing-pen with clean water, and, setting it at a rather coarser pitch than the original line, rule over the line. Let the water lie for a few moments, then dry with blotting-paper, and rub out with soft india-rubber. By repeating the process once or twice, the line will be perfectly erased. The surface may then be polished with the ivory paper-cutter or with the blade of a knife. To take out a blot or a shade of colour, use a wet brush instead of the drawing-pen. An obstinate blot may be removed by scratching it out with the point of a drawing-pen dipped in clean water, blotting the water off the

tracing as often as it gets discoloured. This proceeding, however, will not improve the drawing-pen.

We will next suppose that it is desired to mount a plan or a map (such as a quarter-sheet of the Ordnance Survey) in sections, so as to fold for the pocket or for insertion into a book. These maps usually have a very liberal margin, which, as so much waste-paper, is better cut off. Having decided on the final size, prick the corners through, as at *a a a a* (Fig. 2). Turn it face downwards, and rule lines all round from prick to prick. Then mark it off into the requisite number of squares, which must, of course, be of exactly equal size. Then number the squares in succession before cutting. If this is not done, some comical results will often occur through the sections being mounted in wrong sequence. Then cut it up. It is well to leave a slight margin, as shown by the dotted lines at *b b b b*, so as to allow the edges to be finally trimmed up with a sharp knife. Then with a blacklead pencil rule two or more lines on the drawing-board at right angles to each other, as c c, d d (Fig. 3). Then, having soaked each square for about half a minute, lay them one by one on the wetted board, commencing with the centre sections, 2, 3, 6, 7, and leaving about 1-8in. between each section. When these have been properly placed and stuck down, the others, as 4, will follow. Then apply the pasted cloth as above directed. In removing a map thus mounted in sections from the board, it will be found that in the narrow spaces between the sections it will probably adhere to the board, and the paper-cutter must be used to detach it, care being taken not to "start" the edges, and especially the corners, of each section with the edge of the cutter. If the map is to be attached to a book or case, a margin of cloth must be left on that section which is to be attached. When removed from the board, fold it carefully in the manner which appears most handy (in the above instance, first along the line *c c*, and then along the other lines backwards and forwards alternately), and press it for a short time under a heavy weight. It will afterwards naturally and without difficulty fold in the same manner. In the case of a larger map with three or four rows of sections, first fold all the horizontal and then all the vertical lines, or *vice versa*, and always in a zigzag form, alternately in and out. The above process, though rather complicated to describe upon paper, is remarkably easy to put in practice. There is, however, one class of drawings, or rather engravings, to which it is not applicable. We allude to those upon unsized paper, such as is employed for the French Government

maps, and for some lithographs. This, when wetted, becomes as tender as wet blotting-paper, and is very difficult to handle. We have sometimes employed the following process :—Having arranged the sections, dry or only slightly damped, on the board, we strain the cloth, which must be of an open texture, tightly above them, and then apply glue, as hot and liquid as possible, to the back. This, penetrating the cloth, will produce the required adhesion. The best testimony to the process which we have described is, that in every office where it has been introduced it has superseded all other methods.

We make no apology for repeating an excellent recipe for paste, from "Vanderdecken's Yarns for Green Hands" :—"Next, you will require a good paste that will neither decay nor become mouldy; therefore, mix good clean flour with cold water into a paste well blended together, then add boiling water, stirring well up until it is of a consistency that can be easily and smoothly spread with a brush ; add to this a spoonful or two of brown sugar, a little corrosive sublimate, and about half-a-dozen drops of oil of lavender, and you will have a paste fit to fasten the teeth in a saw." We may add that the paste is none the worse for being a day or two old.—*The Engineer.*

PICTURE FRAMES.—If a frame is required to a picture it should serve its purpose in isolating the painting or engraving from immediate surrounding objects, but it should neither be so attractive as to divert the eye from the work of art to which it owes its existence, nor should it in colour or glitter prove injurious to the effect the artist or engraver desired his picture to have. A few hints may be useful. Where the painting itself represents golden objects, the the real gold of the frame is apt to prove injurious to its effect if brought into too close contact with it, and bronze having less yellow may often be advantageously substituted for the gold. Frames of this kind are also of value for paintings representing effects of fire or artificial light. Ebony frames are apt to injure the browns and deeper tones of a painting from which it should be consequently be well separated either by the mount or by an inner flat of gold. Engravings in gilt frames should always have a certain margin of white mount. Grey is a good colour to associate with most landscape subjects, and it is a good plan where the picture has a dominant tone, or one colour to which all the others are analagous to let the complementary tone or colour lightly tint the mount.

FITTING-UP AND HANGING PICTURES.

THERE is no rule for the width of margin on pictures, but it is usual to give a good broad margin to valuable works of art, such as water-colours, chromos, proof engravings, and even a good photograph will look well with a good margin. We have seen pictures framed with narrow margins according to the whim of their owner, and it has very much taken away from their appearance. Common pictures, or pictures of but little value, do not require wide margins, and in measuring up pictures for framing this should be borne in mind. Engravings on India paper are usually measured for a margin beyond, but where there is no India paper the picture is measured for the top and two sides to be equal, and the bottom margin considerably more, to allow for the title. The plate mark on the picture is sometimes a guide. Large subjects require broader margins than small ones.

Water-colours and chromos can be measured up for equal margin all round, as also photographs, if the margin is wide, but should it be narrow, a little deeper margin may be left at bottom.

There is a circumstance which sometimes decides the width of margin at the bottom of the subject, and that is if the picture is nearly square it is measured up so as to bring the frame a little longer, as many dislike a square frame.

Cleaning Engravings.

The frame maker, in receiving orders for frames, is sometimes required to clean the engravings before putting them in. Valuable old pictures are often discoloured with age, smoke, dirt, and dust, so that the title is scarcely legible, and the picture lost in the stained condition of the paper. A method that will be effective and still preserve the lines of the engraving perfect, will prove valuable when it is required.

The engraving must be laid down on a smooth board, with a clean sheet of paper underneath, and with clean sponge and water carefully wet the picture on both sides, and then saturate it well with a soft sponge with the following mixture:—

¼ lb. Chloride of Lime.
2 ozs. Oxalic Acid.
1 quart of soft Water.

The above will be known to be the right strength by its turning a magenta colour in the course of a day or two.

The application must continue as long as there is any stain to come out, and then sponged freely both sides with clean water. We have cleaned engravings so stained and yellow that the picture could scarcely be distinguished. The paper looked as clean as when it was made, and the engraving stood out brilliant on its new back ground.

We must caution those who try this receipt not on any account to use it on water-colour drawings, or prints that have been coloured with water-colour, as in the first instance a clean sheet of paper would be the result, and the coloured print would be

left plain. The receipt will not touch any colour that has been mixed with oil, as is the case with the ink the picture is printed with. The above receipt loses its virtue when it has been made some time. It will be as well to make it up in the open air, as on mixing the lime is disagreeable.

Fitting Up.

A picture badly fitted up will get discoloured with the air and dust, and will not look so well, or last as long, as if a little more care and time had been spent upon it.

When the frame is made and the picture mounted it is ready for fitting up, when the glass must be cut, care being taken to select a piece free from defects.

Cutting glass is easily accomplished with a little practice, but some of the foreign is brittle, and will sometimes crack across the pane instead of the cut. The *modus operandi* is as follows:—A large pane is placed on the board covered with green baize, and looked over to see there are no defects, when the frame is measured and the straight-edge is placed on the glass, making due allowance for the room the diamond takes up in cutting. A steady cut is given, holding it between the first and second fingers of the right hand, and keeping it inclined towards the arm. If it is a long cut on a large piece of glass, the best way will be to bring the diamond cut to the edge of the board, and with a steady downward jerk of the piece in hand (if the cut has been perfect), the glass will part evenly. With smaller pieces it will part by holding the glass with the finger and thumb of each hand on each side of the cut, and using a little downward force.

When the pane has been cut the required size it must be well cleaned both sides with whitening, and fastened into the frame by pasting strips of paper and laying them in so that one

half lies on the glass and the other on the side of the rabbet. When this is dry it will be firm, and no dust can get in. The picture is then cut to the required size, attention being given that the margin is right all the way round. As this is a matter of some little difficulty to the amateur, we will just say it can be quickly done by measuring the inside of the frame, and then by putting the rule across the picture you will see how much the margin on the two sides measure, when, by taking one half and marking it off on the picture, and drawing a line across as a guide for cutting, the margin will be found to be equal. The picture must be measured in the same way for the two other margins. If, on measurement, it should be found to be a little out, a strip cut from the opposite side where the margin is narrow will rectify the error.

If it is a medium sized picture, a back-board will fasten it in. Back-boards can be had of any thickness, from eight to twelve or more cuts in a three-inch plank. The back-board is cut to the required size, and if not wide enough is glued up with a piece of the required size, and when dry it is planed up and the outside edges bevelled.

Now that the glass is pasted in, the picture cut to the proper size, and the back-board ready, it can be bradded in, but before this is done it will be necessary to see that the glass is quite clean on the inside, that no dust or small particles of wood are between the glass and the picture, and also that the picture is laid in its proper place, when the back can be then laid in. It is advisable to put two or three brads in each side, and then satisfy yourself by inspection that everything is right, or you may have to take out the whole of the brads again to remove a particle of dust or shaving.

The picture must now be backed up with brown paper, or narrow slips pasted round the edge of the back.

If it is to be backed up with brown paper the sheet must be cut the size required and damped with a wet sponge. The back of the frame must be thinly glued, and the paper at once strained on. This will strengthen the frame, keep the dust out, and perhaps hide a back-board not very smooth.

Strips of coloured paper look clean pasted round, when a smooth back-board is in the frame. Where stretchers are used they are backed up in both ways, according to fancy.

Where very light frames are ordered for large chromos or other pictures, the mitres cannot be made strong enough to sustain the glass and back, and, in inserting the rings in a frame, this can be compensated for in the position the rings are placed. If they are inserted into the top bar of the frame, all four of the mitres take equal share of the weight; if screwed into the two sides, the bottom mitres alone take the weight of the picture; and if screwed into the bottom rail no strain on any of the mitres is the result, as the bottom rail sustains the whole. This last method is desirable for very light frames, and, when adopted, some light rings must be also screwed into the back of the top bar, through which the cord must be passed and fastened to the rings on the bottom bar of the frame.

In fitting up maple and gold frames, the inside gold must be blocked in tight, and when the gold is ordered under the glass, the glass must first be cut. The stretcher with the mounted picture will be bradded in last, and the back covered with paper. With maple, rosewood, oak, or any French polished frames, it is necessary to clean them down with a reviver before sending them out, as in handling the moulding it becomes dull. Receipts will be found at the end of this volume.

Hanging Pictures.

Our Fine Art exhibitions in the metropolis and large towns

of England, together with art unions and education, have improved the taste of the English people in their appreciation of the beautiful. There is now scarcely a cottage where its inmates do not look with pride and pleasure upon some humble effort of art, that adorns the walls of their home, and from the artizan to the titled nobility of our land, the work of the artist and engraver is admired and valued.

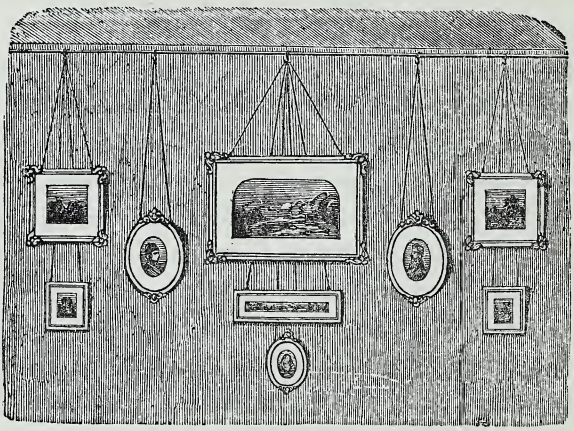
As pictures are so generally appreciated and used as a decoration, it is important that they should be hung properly in order to obtain the largest amount of enjoyment from their inspection. The following hints may not be unacceptable to those seeking information.

In hanging pictures the effect is oftentimes marred by the position and manner in which they are hung, although their owners think themselves perfectly competent to put up their prized works of art so that they shall look well and be appreciated. Our remarks will apply to the elegant rooms of good houses, yet the hints, as far as they can be carried out, will apply to the more humble dwellings of the middle class.

It is an established custom that oil-paintings are to be hung in dining-rooms and halls, water-colour drawings and chromos in drawing-rooms and boudoirs, and engravings and prints decorate ante-rooms. And while this division is made, it is necessary to observe a selection in each class, as an oil-painting by one of the old masters would be out of place hung by the side of a recent work of an R. A. In our public exhibitions, artists know that their works suffer from being hung by the side of unsuitable companions. Care will also have to be exercised in the selection of drawings or chromos for the drawing-room, as the effect of one picture is often spoiled by being hung in close contiguity to another, and subjects should only be chosen of the purest kind, such as landscapes, interiors, sea pieces, fruit or flowers,

classical ruins, &c., while no representations of martyrdom, nude figures, or anything of a repulsive nature should be allowed on the walls. All the subjects should create feelings of repose, peace, and purity. We need not mention the desirability of having, if possible, the choicest pictures in good central positions, as well as selecting appropriate subjects in style, frames, and size, for pairs where it is necessary to pair them up.

The effect of different subjects may be mentioned. If life-sized figures are hung, the effect will be to make the room look smaller, consequently these subjects would suit the largest rooms,



Arrangement of Pictures.

while interiors and landscapes seem to enlarge a room. Full length figures or life-sized animals should not be hung with other subjects, as a collection of giants and pigmies fails to give pleasure, and is most incongruous.

Pictures have very often to be hung on walls covered with paper hangings, and the less colour and pattern there is the better. A light pattern gives space, while dark grounds seem to contract the room. Brilliant colours in foliage, fruit, or

flowers, are objectionable, and simple neat patterns will be found to harmonize best in a room where it is required to make the pictures effective. The carpet should not be resplendent with all the colours of the rainbow, but a neat dark pattern will heighten the effect of the pictures with a seeming augmented light.

In hanging pictures much depends on taste; some will have the bottom edge of the frames all round a room to range exactly, while others prefer to see the line broken. Due care must also be exercised so that the shadows of a subject are not placed next to a window, as then the side needing most light will not receive it, and a good subject will be spoiled, the owner not knowing why.

It is scarcely necessary to mention that small subjects should be hung down nearer the eye than subjects with larger figures, which can be seen to advantage at a little distance. Pictures hung opposite windows are seldom seen to advantage, as the glass or the varnish reflect the light in an unpleasant manner, hiding the picture from a person standing in front of them. The light in some apartments, too, will suit some subjects better than others, as a full light thrown on a picture will bring out its beauties, while a subject of a different class will be better in a room where less light is admitted.

Brass picture rods are usually placed round the top of a room, but in rooms where this is not the case they are secured by nails, cords, and chains. In some rooms where the pictures are heavy, they are secured by brass plates screwed on to the frame and then screwed to the wall, and this method is preferable, as no cords or chains are seen. Care is required that nails, cord, chains, and rings, are strong enough, as if either gives way, much damage is the result; and it is annoying to come down stairs in the morning and find a heavy frame and picture damaged

on the floor, and the remains of broken vases, &c., smashed in its descent. There is to be had gilded wire cord of various thicknesses, that will not stretch like the usual cord employed for the purpose, but even this requires looking to at times, as the friction and strain on a hook or nail weakens the wire.

Where no brass rods are put up, the pictures must be hung on nails or hooks, and these should be well secured. It will sometimes be necessary to plug the wall, but a good hold for a nail is often found at the top of a room. Nails can be had with brass heads, also with heads of white porcelain to screw off and on; with these last, care must be taken in driving them, or the bur caused by the blows will hinder the head from screwing on.

The colour of the cord should correspond with the paper or the paint in the room as much as possible, so as not to be noticed, as it is no ornament to see cords on the walls.

If two or three tiers have to be arranged, it is necessary sometimes for the top tier to lean forward to obtain a good view of them. This can easily be accomplished by putting in the rings about one third of the distance down the sides of the frame, instead of in the top, and the lower the rings are put the more forward will they hang. This method is sometimes advantageous where glazed pictures have to be placed opposite the light, as it helps to throw off the reflected light from the window opposite.

Where the usual picture cord is used, it should sometimes be looked to, as it is liable to break where it is in contact with the nail and rings, and is constantly getting thinner by stretching from the weight of the picture.

It will be seen from the foregoing remarks that the seemingly simple work of picture hanging requires taste and judgment, and that due care must be exercised to make valuable pictures secure in their positions.

The Amateur Picture Frame Maker's Tool Chest.

As many amateurs undertake the work of making picture frames as a recreation, a good reliable chest of tools has been made for their use, so that they can at once proceed to put in practice the instruction given in this volume.

The chest is well made, stained and varnished, and is fitted with a tray for brads, picture rings, &c. It contains a mitre block, shooting board, picture frame maker's hammer, brad awls—various sizes, gimlet, pliers, square, corners for mitreing, brads—various sizes, picture rings, &c. The above articles will be found well made and of the best manufacture, unlike the cheap and useless tools usually sent out in tool chests.

It may be obtained of Mr. C. H. Savory, carver and gilder, Caxton House, Cirencester, at 12/6; and a larger chest containing shooting plane and good saw, at 24/.

PICTURE BUYING is all, more or less, a matter of fashion, and people in purchasing pictures often show not merely a want of culture but an incomprehensible ignorance of simple nature, that one would think impossible in any Englishman who lives in the country.

Many are led by picture-dealers and picture-jobbers to buy dull rubbish, rubbish that is by no means certainly genuine; and the "trade" is so confident of the ignorance of their customers, and so unblushing in its doings, that of poor George Michel's thousands of landscapes, not one but dozens, have been imported to pass for Cromes and Cotman's as if there could be any confounding these two. Unbounded trumpery has been sold for the over-rated works of Crome. People were astonished when they heard that someone had put a sky to a skyless sketch in water colour, as if everyone did not know that dozens of W. Hunt's smaller studies have had backgrounds put to make pictures of them, as if swindling did not almost daily occur, and false works were not brought to "market" with the names of Turner, Linnell, Cotman, Constable, and Crome, to say nothing of even third and fourth-rate landscapes, for no game is too ignominious to be flown at. We have no pity for those who buy pictures "as an investment;" let them take their chances, and accept, if they please, the assurances of their mentors.

MOUNT CUTTING.

MOUNT cutting has become a branch of industry, at which hundreds are employed. In small towns the business would not be remunerative, and only in London and the largest towns are mount cutting establishments to be found. The mounts required by country picture frame makers are usually ordered from one of the London houses. Of late years, this business has received considerable impetus from the number required in the mounting and framing of photographs, as well as the large number of water-colour and pencil drawings requiring mounts. It is now generally acknowledged that a cut-out mount, with its smooth bevel, very considerably improves any drawing or photograph, and the advantage of knowing how to cut out a mount to an exact size is apparent to the picture frame maker, while to the amateur it would be a labour of love.

Very few frame makers know anything of mount cutting, and however small a mount is required, the order is obliged to be sent to London, or elsewhere, unless it should happen that it is in stock. A few hints on mount cutting may not be out of place here, as, with a little practice, the country frame maker would be able to oblige a pressing customer with a mouut at short notice. Oftentimes the London mount cutters are most

dilatory in sending off their orders, as well as charging a high price for miscellaneous work.

There are three things on which we shall say a few words, viz:—The material employed; the tools used; and the method of work.

Cardboard is used for the best mounts, and a commoner board called mounting-board for cheap work, The cardboard is white throughout its thickness, so that if a water-colour requires a mount without a gold bevel, the bevel shown on the picture is a clean white; with pasteboard this is not the case, as the bevel would not be the same colour as the margin, the inside of the board being made of commoner material.

Boards are made of various sizes and thicknesses, and the following are the sizes most in use, with their technical names:—

Description.	*Size Trimmed.*	*Description.*	*Size Trimmed.*
Antiquarian ...	53 by 35 in.	Royal	23 by 18½ in.
Dble. Imperial ...	43 „ 29 „	Half Imperial ...	21½ „ 14½ „
Dble. Elephant ...	39½ „ 26½ „	Half Royal ...	18½ „ 11½ „
Atlas	33 „ 26½ „	Qrtr. Imperial ...	14½ „ 10¾ „
Imperial	29 „ 21½ „	Qrtr. Royal ...	11½ „ 9¼ „

PHOTOGRAPHIC SIZES.

Description.	*Size of Opening.*	*Description.*	*Size of Opening.*
Carte de Visite ...	2¼ by 3½ in.	Whole Plate ...	8½ „ 6½ „
Quarter Plate ...	4¼ „ 3¼ „	Cabinet	5½ „ 4 „
Half Plate	6½ „ 4¾ „		

The thicknesses are known by the number of sheets of paper in the board, and in the trade are called 4-sheet, 6-sheet, 8-sheet, 10-sheet, 12-sheet boards. The first are thin, and become thicker according to the number of sheets,

Boards, as used by mount cutters, can also be had of any tint or colour.

Gold and imitation gold paper is used for the bevel of the mounts when cut.

Gold ink made from bronze powder is used for the gold line when required. A receipt will be found at the end of this volume.

The tools used by the trade are few, and need but little description. They may be enumerated as mount cutting knives, steel straight edges, (one edge bevelled;) cardboard cutter, ruling pens, a piece of plate-glass, scissors, pencils, knife, oil-stone, and a few other appliances.

Mount Cutting.

The *Cardboard cutter* is a long knife affixed to a stand on which there is a gauge, and it trims or cuts cardboard very expeditiously. This article may be had of any dealer in book-

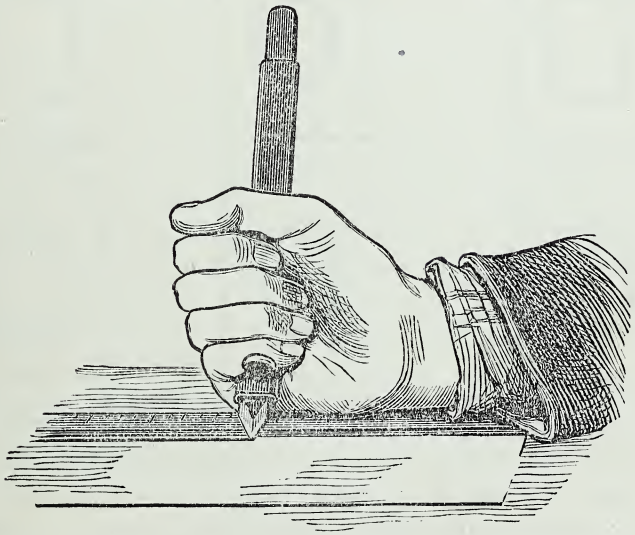
binder's tools. The *mount cutting knife* is a straight piece of steel with the end brought to a sharp cutting edge and pointed, and is fastened into a suitable handle by a screw. (See Fig. 1.)

FIG. 1.

FIG. 2.

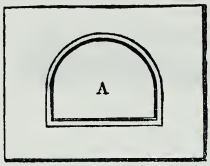
Mount-Cutting Knives.

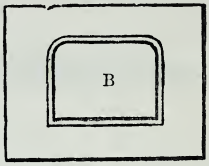
Another cheaper knife is used as Fig. 2. These knives may be had of C. H. Savory, carver and gilder, Caxton house, Cirencester; the first at 3/, and Fig. 2, 1/6, post free.

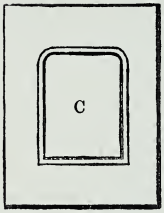


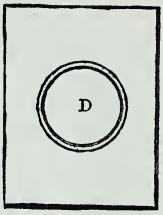
Steel straight-edges may be had from one to three feet in length, and for mount cutters' use one edge is bevelled. *Boxwood straight-edges*, with the inches marked, will also be found indispensable. The *Ruling Pen*, such an one as is usually found in a case of mathematical instruments, needs no description, neither any of the other articles before mentioned.

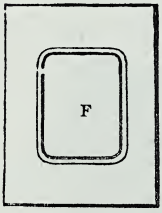
Mounts may be cut to any pattern or shape, but the following are recognised shapes for photographs, &c. :—Oval, dome, square, cushion; and drawings sometimes look well with mounts, the top corners of which are rounded.

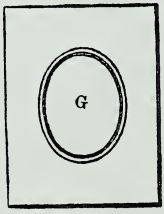












The above diagrams will illustrate the technical names of mounts:—D, round; E, square corners; F, cushion shape; G, oval; H, dome-top upright; A, dome-top landscape; B, top corners rounded (landscape); C, top corners rounded, upright.

It is usual with water-colours to have the mounts plain, but many require the gold line and bevel, while some prefer gold bevel only. Photographs and other pictures are usually mounted with the gold bevel.

We will now describe the operation of cutting a small mount. Suppose the order to be as follows :—"Size, 12 in. by 14, gold line, and bevel 3 inches margin," First, select a suitable piece of board as to thickness, which would be about a 6-sheet board, and measure it from one of the edges. The size for the outside of the mount, which, with the margin, will be 15 by 17. Trim the board with the cardboard cutting machine or a knife to the marked size, and let the outside edges be square. Then mark the size of the mount in the centre of the squared board; this you can do by marking three inches of the margin from two sides with a T square, and the margin will be found correct on the two other sides when the lines are drawn. Having the sides lightly marked with pencil, take the straight edge (or some would use a stout piece of cardboard with the bevel evenly cut) and place the edge a little distance from the mark on the board, and holding the knife as before described, enter it at the point farthest from you and make a firm cut inwards; turn the board round and cut each side in the same way, care being taken to go well up into the corners, or they will not be neatly cut. If well and evenly cut, the piece cut out will be found to have the light pencil mark round its edge, the cut bevel thus giving the exact size required.

If the board is thick, it is likely it will not be cut through at the first attempt.

Where a large number of mounts are cut, a piece of plate-glass is used to work on, and if this is not used care must be taken to have a perfectly level surface for the knife to travel over, or you will not produce good work. A broken piece of plate can be purchased very cheaply at the glaziers.

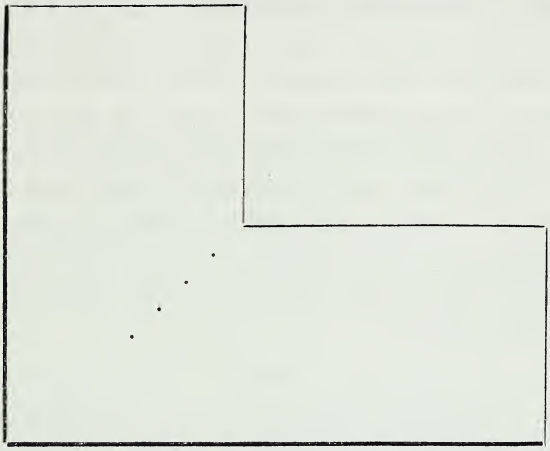
If the bevel edge, when cut, should happen to be rough or frayed, it may be rectified sometimes by judiciously using the knife in one or other direction.

It is scarcely necessary to mention that the knife should be kept with a good edge on it.

Our mount is to have a gold line and bevel. The bevel is covered with gold paper, and this little operation has been thought very difficult by some, but it is very simple. Take a sheet of gold paper and cover the back of it with thin French glue, being careful no dust or grit is in it, and hang up the sheet to dry. When dry, with the straight-edge cut the sheet up into strips about the eighth of an inch broad. Next pass over the tongue four strips, or enough of the gold paper for the mount, when the contact of the glue with the tongue will have moistened it, and it will be stickey and pliable. Now take the mount and lay it down on the board before you, and with a strip of gold in the left hand, commence at the right hand corner of the mount, and lay the strip close up, letting the edge of it be just covering the turn of the bevel; when about an inch is laid by the left hand, a clean duster once round the first finger of the right hand passed over the short piece laid in its place, will secure it, and in like manner till you get to the end of the bevel, when a small scissors is used to cut the strip exactly to fit the corner. It will now be found that one half of the gold strip is secured to the mount, and the other half is sticking to the board; carefully disengage the paper from the board by rising the mount, and pass the tongue quickly over the glue again, and with the finger of the right hand, as before, rub it down carefully over the sight edge of the mount and rub it down at the back. The other three sides must then be covered in the same way. The gold bevel of this mount could be laid by a girl in a few minutes.

The gold line must next be put in, and is very quickly and neatly done as follows :—The workman has a piece of cardboard, and across the angle there are several point holes.

This piece of cardboard is placed evenly on one corner of the mount, and with a point, lightly mark through one of the holes



according to the distance the line is required from the sight edge; the other three corners are marked in the same way. The ruling pen is filled with gold ink made from bronze powder, and the steel straight-edge laid from one marked point to the other, and the line ruled evenly; when the other three sides are ruled in the same way the mount is complete. If a gold line is required on an oval mount, a ruling pen put into a pair of compasses will rule a line with the other leg being used as a guide on the sight edge.

A mount cutter has a large variety of different shapes and sizes, and it is very seldom he requires to mark out the size of a mount, as, if a number of one size is ordered, he will place a pattern mount on the cardboard, which is ready cut to the size, and proceed at once to cut the number required, without marking. Where there is no pattern the exact size, it would be better to mark out the size.

Where an oval is required, and you have a lot of pattern

sizes, by drawing two straight lines for the length and width required; a pattern oval placed over the lines, and one quarter marked at a time, shifting the pattern to suit the size, will be found a ready method. Where there are no patterns, an oval can be well drawn with a pencil, two pins, and a loop formed of thread. If you wish to draw an oval 15 by 12, place the pins 9 inches apart on the cardboard, and place over them a loop of 12 inches; and, on using the pencil in an upright position in the loop, you will find the correct size has neatly been drawn.

Round corners, dome, gothic, and other shapes, are easily drawn from patterns.

WALL DECORATION.—It is not at all an affair of small consequence, as many seem to think, what the paper of a room may be, since with our cabinets and pictures, brackets and sconces, vases, busts, and old china, we can nearly cover it, because, whatever be the furniture, a large share of the whole temperament of the room will be given by the wall-paper. The colour of the wall-paper should be selected in relation to the general tone of colour chosen for the room. Like the curtains and furniture coverings, it must either be in contrast or in unison with the carpet, although in more delicate tints, subdued meanwhile, and quiet both in hue and pattern. It will always be well for the furnisher, unless possessed of a nice instinct for colour, to look first a little into the analogies of colours, to remember that the primary colours—blue, yellow, and red—have their complements in orange, purple, and green, and that the tertiary colours—the russets, citrines, and olives—have again their own complements; and with these, of late, very fine effects have been produced. M. Chevreul, of the Gobelins factory, has made some valuable observations upon the harmonies of the various colours, and he classifies the harmonies resulting from immediate juxtaposition of certain tones, where the pure tint is either dulled or heightened by admixture of black or white, those resulting from pure tints mixed with the least other colour, and those where well-contrasted colours seem all to be under the effect of one of the colours a little stronger than the rest. A little attention to the subject, although not necessarily on a very minute scale, will prevent violent dissonances hurting the eye, and secure agreeable sensations. —*Furniture Gazette.*

FRENCH POLISHING,

VARNISHING AND STAINING.

FRAMES made to order, of oak or other wood, require French polishing or varnishing. It will be convenient to know how to lay on a lasting and brilliant polish, when the following precise directions, if followed, will give a satisfactory result.

French Polishing.

The mode of application necessary for French polish differs from that of ordinary varnishes, being effected by rubbing it with a fine cloth upon the surface of the material to be polished, and using oil and spirits of wine during the process. In applying it to large surfaces use a rubber formed of a flat coil of thick woollen cloth, such as drugget, &c., which must be *torn* off the piece in order that the surface of the rubber, which is made of the torn edge of the cloth, may be soft and pliant, and not hard and stiff, as would be the case were it to be cut off, and therefore be liable to scratch the soft surface of the polish. This rubber is to be securely bound with thread to prevent it from uncoiling when it is used, and it may vary in its size from one to three inches in diameter and from one to two inches in thickness,

according to the extent of the surface to be polished. The polish is to be applied to the middle of the flat face of the rubber by shaking up the bottle containing it against the rubber; it will absorb a considerable quantity, and will continue to supply it equally and in a due proportion to the suface which is undergoing the process of polishing. The face of the rubber must next be covered by a soft linen cloth doubled, the remainder of the cloth being gathered together at the back of the rubber to form a handle to hold it by, and the face of the cloth must be moistened with a little raw linseed oil applied upon the finger to the middle of it, and the operation be commenced by quickly and lightly rubbing the surface of the article to be polished in a constant succession of small circular strokes, and the operation must be confined to a space of not more than ten or twelve inches square until such space is finished, when an adjoining one may be commenced and united with the first, and so on until the whole surface is covered. The polish is enclosed by the double fold of the cloth, which, by absorption, becomes merely moistened with it, and the rubbing of each piece must be continued until it becomes nearly dry. The rubber may, for a second coat, be wetted with the polish without the oil, and applied as before. A third coat may also be given in the same manner; then a fourth with a little oil, which must be followed as before, with two others without oil; and thus proceeding until the polish has acquired some thickness, which will be after a few repetitions, and depends on the care that has been taken on finishing the surface. Then a little spirits of wine may be applied to the inside of the rubber after wetting it with the polish and being covered with the linen as before; it must be very quickly and uniformly rubbed over every part of the surface, which will tend to make it even, and very much conduce to its polish. The cloth must next be wetted with a little spirits

of wine and oil without polish, and the surface being rubbed over, with the precautions last mentioned, until it is nearly dry, the effect of the operation will be seen, and if it be found that it is not complete the process must be continued, with the introduction of spirits of wine in its turn, as directed, until the surface becomes uniformly smooth and beautifully polished. The work to be polished should be placed opposite the light, in order that the effect of the polishing may be better seen. In this manner a surface from one to eight feet square may be polished, and the process, instead of being limited to the polishing of picture frames or other smaller works, can now be applied to tables and other large pieces of furniture with very great advantages over the common method of polishing with wax, oils, &c. In some cases it is considered preferable to rub the wood over with a little oil applied on a linen cloth before beginning to polish, but the propriety of this method is very much doubted.

When the colour of the wood to be polished is dark, a harder polish may be made by making the composition of one part of shellac and eight parts of spirits of wine, proceeding as before directed. For work polished by the French polish, the recesses or carved work, or where the surfaces are not liable to wear, or are difficult to be got at with the rubber, a spirit made without shellac, and considerably thicker than that used in the foregoing process, may be applied to those parts with a brush or hair pencil, as is commonly done in other modes of varnishing. French polish is not proper for dining-tables nor for anything where it is liable to be partially exposed to a considerable heat.

Stopping for French Polishing.—Plaster of Paris, when made into a creamy paste, with water, proves a most valuable pore-filling material. It is to be rubbed by means of a coarse rag across the woody fibre into the holes and pores till they are completely saturated, and the superfluous stucco on the outside is to be instantly

wiped off. The succeeding processes are technically termed papering, oiling, and embodying. When finely-pounded whitening is slaked with painters' drying oil, it constitutes another good pore-filler. It is applied in the same manner as the preceding one, and it is recommended on account of its quickly hardening and tenacious virtues as a cement ; sometimes white lead is used in lieu of the whitening. Before using either of these, or other compositions for the same purpose, it is best to tint them to correspond exactly with the colour of the article it is intended to size. Holes and crevices may be well filled up with a cement that is made by melting beeswax in combination with resin and shellac.—*Workshop Receipts.*

A practical French polisher gives the following directions for work :—

Before commencing the polishing, the first care should be to place the article prepared for polishing in a good and suitable position. The bench should be covered with thick soft cloths ; its most suitable height is between three and four feet, its width should be a little more than three feet, and its length about six feet. It shouid not be fastened down, and the room in which it stands should be warm, dry, well lighted, and free from dust. Pads will be required occasionally to support ths article you are polishing in convenient positions.

Rubbers.—They are usually made of white wadding, and the larger round ones, used for more extensive surfaces, are mostly made with pieces of old flannel, the softer the better. These should be very firmly and compactly put together, for the more solid they are the more effective are they in use. The best coverings for rubbers are made with fine linen.

Rags.—Pieces of old cotton that have been frequently washed will do for the spiriting cloths very well. Clean them well by first boiling them in a strong lye of potash, and afterwards in a weak one of soap-powder, rinsing them well after, and between each boiling, with clean water.

Applying the Polish.—Some put the polish into a saucer, into which they dip the rubber ; others put it on from the bottle, through some drilled punctures. Which ever way is adopted, care must be exercised in preventing the rubber from receiving too plentiful a supply. After wetting and covering the *sole*, it should be pressed forcibly upon the palm of the hand to equalize the moisture. Cover your rubber with a clean part of the rag at each wetting. The

rubber should now be swept regularly and gently over the surface, from end to end, in the running direction of the fibre, three times, lightly, for to lean too heavily on the rubber while the surface was moist would be a serious error. Then rub across the grain in a series of half-circular movements until the rubber is dry, never working too long in one direction. Repeat this operation until the surface assumes a satisfactory appearance, and then leave it where it will be most free from dust for about twelve hours. At the expiration of that time the polish will be well into the wood, and after smoothing and dusting it is ready for the finishing.

After sweeping the rubber over the work in the way above described, it is next applied with a rotary motion and gradually increasing pressure, and finished by slighter rubbings, sweeping along the grain to remove all traces of the rubber's circular movements.

Rubber marks may be removed by their being rubbed in a direction the reverse of the marks, with a half-dry rubber and heavy pressure. If the surface is very large, such as the top of a dining-room table, do half, or less, at a time.

Prior to the application of the spirit used for finishing, ply the rubber briskly to get a dry clean surface. In spiriting, do not use too much of the finishing spirit, for if you do the gum of the polish will be re-dissolved and form dullness instead of brilliancy. The author of *The French Polishers' Manual* says :—"Most polishers seem to think that nothing can be more productive of transparent brilliancy and durable hardness at the finish than a moderate use of spirit that has been somewhat weakened by exposure to the air, and suffering two hours to intervene as a resting period intervening between the final embodying and the spiriting." In the embodying or spiriting, never allow the wet rubber to stick even for an instant to the surface of the polish.

Directions for Re-polishing.—In order to apply this process with facility. you will find it needful to separate the various parts of each article. If your job be a wardrobe, take off the doors by unfastening the hinges ; extricate all the screw nails ; take off the cornice ; lift the wings or carcasses from the base, and then separate the mouldings and other carved ornaments from the frames and panels of the doors. If it be a chest of drawers, pull the drawers out, screw out the knobs or handles, extricate the scutcheons from the key-holes, free the columns or pilasters from the recesses, and lift the carcass from the base. If your job should happen to be a sideboard,

separate the upper back from the top, unscrew the under back, and then take the base, top, and pedestals apart. After this take a pencil and put tallying marks on every two meeting sides, to guide you when replacing and putting together the parts. The viscid rust must be thoroughly removed from the surface of the work by scrubbing it with a paste composed of the finest emery flour and spirits of turpentine. Always after cleansing, and before re-polishing, it is a good plan to merely moisten the face of the work with raw linseed oil, to facilitate the unity of the new polish with the old.

Where shallow dents, scratches, and broken parts of the polish exist, coat these carefully two or three times with a thick solution of shellac, and when these coatings are hard, rub them with soft putty until they become uniformly smooth and even. Then polish according to the directions already given.

Fine carving, after it has been polished to the extent possible, is coated with a thickish solution of shellac in spirits of wine, applied with a sponge, then rubbed down with the finest glass-paper with great care and patience, and again well bodied with polish, and evenly coated with what is technically known as *slake*, applied with precision and considerable care. After some hours have elapsed and the polish is sufficiently hard, it is finished with a rubber slightly wetted with thin polish.

Some indentations may be effaced by repeatedly putting wet pieces of paper over them and pressing them down with a hot flat iron until all the moisture has evaporated. The top of a dining-table, after polishing, may be finisned solely with oil.

Raw linseed oil is the only fixed oil used in French polishing. French polish may be made by dissolving twenty-eight ounces (avoirdupois) of shellac, and three half-ounces of sandrac, benzoin, white resin, thurse, in a gallon of O.P. finishing spirit. Substitute pure bleached shellac for the brown if a white polish is required.

The slake, or finishing varnish, is made by digesting one ounce of mastic and five of benzoin in five gills of finishing spirit.

In slaking, if one coat is not enough, apply a second after the first is dry. It is a very bad plan to put slake on newly-spirited work, or to re-apply it on old bodies.

To preserve the rubbers and sponges used in French polishing, they should be kept in a close tin cannister.

Thin pannelling for doors should be tacked down securely to a flat board for polishing. If the panels are fretted, their edges must be varnished before you do this.

To put a fine polish on an elaborate fretting of rosewood, will test all the skill and knowledge of a good polisher. This arises, not from the fibrous poriness of the wood, but is due to the fragile and delicate character of the parts.—*Furniture Gazette.*

Polishing with Charcoal.

We extract from the *Cabinet-Maker* the following description of the method of polishing wood with charcoal, now much employed by French cabinet-makers :—

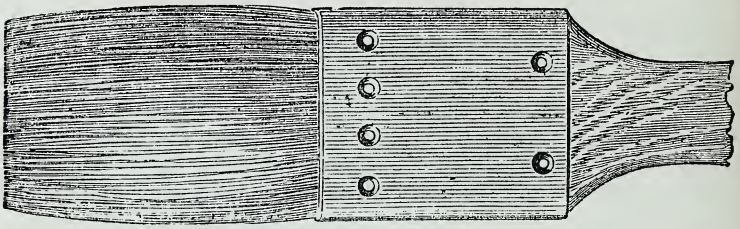
All the world now knows of those articles of furniture of a beautiful dead black colour, and with sharp clear cut edges and a smooth surface, the wood of which seems to have the density of ebony ; viewing them side by side with furniture rendered black by paint and varnish, the difference is so sensible that the considerable margin of price separating the two kinds explains itself without need of any commentary. The operations are much longer and much more minute in this mode of charcoal polishing, which respects every detail of the carving, while paint and varnish would clog up the holes and widen the ridges. In the first process they employ only carefully-selected woods of a close and compact grain ; they cover them with a coat of camphor dissolved in water, and almost immediately afterwards with another coat composed chiefly of sulphate of iron and nut-gall. The two compositions in blending penetrate the wood and give it an indelible tinge, and at the same time render it impervious to the attacks of insects.

When these two coats are sufficiently dry, they rub the surface of the wood at first with a very hard brush of couch-grass *(chiendent)*, and then with charcoal of substances as light and frail as possible, because if a single hard grain remained in the charcoal this alone would scratch the surface, which they wish, on the contrary, to render perfectly smooth. The flat parts are rubbed with natural stick charcoal, and indented portions and crevices with charcoal powder. At once, almost simultaneously, and alternately with the charcoal, the workman also rubs his piece of furniture with flannel soaked in linseed oil and the essence of turpentine. These pouncings, repeated several times, cause the charcoal powder and the oil to penetrate into the wood, giving the article of furniture a beautiful colour and perfect polish, which has none of the flaws of ordinary varnish. Black-wood, polished with charcoal, is coming day by day to be in greater demand ; it is most serviceable ; it does not tarnish

like gilding, nor grow yellow like white wood, and in furnishing a drawing-room it agrees very happily with gilt bronzes and rich stuffs. In the dining-room, too, it is thoroughly in its place to show off the plate to the greatest advantage, and in the library it supplies a capital frame-work for handsomely-bound books.

Varnishing.

Flat camel's hair or hog hair brushes are generally used for varnishing, and vary in width to four inches broad and upwards.



Hogs' Hair Varnish Brush.

Turned and carved work require small tools to go over the members and sweeps. The best way to preserve them is to rinse them after use in finishing spirit, and hang them up in a dry place where no air is moving.

Where the brushes have been neglected, they must be soaked in varnish for an hour or two, but if wanted immediately they can be softened in lukewarm methylated finish. For fancy work a good sponge will sometimes be found preferable.

The varnish dish should be provided with a closely-fitting lid, and a wire strained across to scrape the brush over when dipped, or too much will be laid on.

After dipping, the brush should be passed over the wire, and the first coat may be laid on across the vein of the wood as evenly as possible, but in the finishing the varnish must be laid on with the grain. The tool should be lightly handled and not slowly used, as some varnishes set very quickly. Varnishers sometimes make a ground with a rubber full of French polish

before the application of the spirit varnish. The rubber must be thoroughly dry before the application of the varnish. The last coat applied should stand some time before receiving the fine varnish. It should be finished off with a damp rubber. The above will give brilliant and lasting work.

A correspondent writes in the *Trade Bureau* on varnishes and varnishing as follows :—

"Crawling" is caused by the gloss of the coat beneath it, which does not form a proper ground, which is shown by the fact that just so soon as this gloss is removed there is no further trouble found. "Crawling" is therefore not a serious trouble, for it may be easily prevented by washing the under coat with water, and wiping with wash-leather, as this will destroy the brilliancy of the gloss, and in many cases the mere dusting with a stiff duster will be found sufficient. When a previous coat "crawls" I have found that the following coat is more apt to do so, and in cold weather there is more liability of this trouble than in summer, for then the gloss of the under coat seems to come up to a "harder sharp." But kill the gloss of the under coat and you kill crawling.

There are many points to which the varnish manufacturers must direct careful attention, and which the customer must understand in order to judge of the merits of an article. Varnish should be a clear liquid fluid before application, and after being applied should become solid and have a brilliancy which reflects and refracts the rays of light like the fragment of a crystal. It is as a fluid what glass is as a solid. It heightens the tone of colours and preserves them; it brings out the delicacy of outlines and of shading, and time should neither colour nor dim it. It is necessary that it should adhere to glass, wood, or stone, that it may not be removed by anything short of an iron instrument or by the action of fire. It must also be strong drying, and when dry and hard should become firm and unalterable in character, so that it shall neither crack nor turn white, nor be affected by light or ordinary heat, nor removed by any ordinury solvent. In other words, the qualities to be considered in testing varnish are as follows :—

1st. *Absence of Colour.*—An important quality for some classes of work, and the one which is generally first looked to.

2nd. *Its Fluency.*—Upon this depends the working quality. It

also has much to do with determining the real value of the article, as it governs the amount of surface which a gallon will cover.

3rd. *Time of Drying*,—This is essential, because it affords a speedy protection from atmospheric changes, insects, &c., and dispenses with the inconvenience of housing newly-varnished work for a long time.

4th. *Time of Hardening*.—This feature is entirely independent of the foregoing. A varnish is *dry* when its surface is sufficiently tough to resist dust, insects, and currents of air, and after *hardening* it is solid.

5th. *Fulness*.—This is often expressed by painters as "staying where put." If a varnish continues to look bright and to stand out prominently after drying and hardening, we say it has *fulness*. Otherwise it will look thin and "saddened."

6th. *Brilliancy*.—Next to durability, this is the most important qualification of a varnish.

7th. *Durability*.—This is the principal consideration, and in examining the merits of a varnish the consumer should direct special attention to this point. It includes the quality of elasticity, which will prevent cracking and scaling, and the quality of resisting the corrosive action of the atmosphere and of moisture. It is the most difficult feature to decide upon, for it is simply a question of time, whereas the six conditions which precede may be fully tested by a few trials.

Having defined the seven qualifications which are requisite to the perfect varnish, we will add, in the way of caution, that while testing a varnish, the purpose for which it is required must be held constantly in mind, and especial heed should be given to those features which will best qualify it for the class of work in question.

Wood Staining.

Wood staining is an art whereby the surface of the wood is washed with colour, or another piece of wood matched or imitated, and plain pieces of wood are also improved by staining.

All the colours used in staining should be well pulverized, and before use the liquid should be strained. The stains should be tested before undertaking any important work, so as to be certain of producing the required shade on hard or soft wood,

and an inexperienced hand had better coat twice with a weak stain than darken beyond what is required with a strong one. The ends of spongy wood may be stained to match, by filling up the pores with varnish and glass-papering down. Smooth work should be first oiled and then glass-papered, and this enables the wood to take the stain more regularly, and to retain a degree of smoothness. If stain is laid on with a brush it should be softened with a badger. Stains may also be *combed* to represent oak grain, but for engraining, small sash tools or camel's hair pencils are useful. Before it can be ascertained what the exact shade will be, it must be thoroughly dry.

Much of the cheap furniture now sold is stained wood, and walnut is imitated by darkening elm or beech. The more figure there is on the wood the better: beech may be made to imitate mahogany by the following receipt:—One ounce of dragon's blood, pulverized, put into one pint of rectified spirits of wine; keep it in a warm place until dissolved.

White deal may be stained to imitate old oak by equal parts of burnt umber and brown ochre mixed with a very thin glue size; mahogany may be imitated by one part Venetian red and two parts yellow lead; rosewood by Venetian red with lamp-black; walnut by burnt umber with yellow ochre. The colours should be mixed with thin size and laid on warm with a soft woollen material, and the wood wiped dry with shavings after application.

Oak stain may soon be made by adding to a quart of water two ounces each of American potash and pearlash. This is a very good stain, but should be used carefully, as it blisters the hands and softens brushes. It should be kept corked up. A lighter stain may be made by adding more water.

To improve the tint of any stain mix one ounce of nitric acid, half a tea-spoonful of muriatic acid, quarter of an ounce of grain

tin, an two ounces of rain water. It should be kept in a well corked bottle, and mixed two days before using. A little of the above will render any stain more brilliant.

Receipts for Polishing, Varnishing, and Staining, will be found in the next chapter.

THE LOVE OF BEAUTY.—Everything which surrounds us is an influence. We are surrounded with beautiful things in the world, and it is our duty to make our homes look as beautiful as possible. Everything we have in our homes, every glass and jug, every painted door and table, is an influence, an association, out of which the mind receives its instruction, even more than that which the pedagogue conveys in school. Therefore, art is nothing more nor less than the recognition of the example set us by God. I should be sorry to limit art to a mere canvas and statuary exposition of it. The basis of all good art—of painting, statuary, and architecture, and the ornamentation of domestic vessels—is a constant acknowledgment of the beauty of the external world, out of which can only come good art. The craving for this art is perfectly universal. The savage who carves his spear and war instruments, and paints his body, evinces a leaning towards things that are beautiful. The commonest hind, who cultivates his small plot of land with flowers, is declaring an inward and conscious sense of the beauty alluded to. Therefore the manufacturer, the designer of every class, and the workman, instead of working from the thought that he is merely catering to a luxurious feeling, should labour rather with the consciousness that he is labouring to cultivate and raise that which in the human mind is a natural instinct. To the designer—and house-painters and architects are among this class—a true sense of art is indispensable, that he should think for himself, and not be continually reproducing what has been done before. Take the ordinary house painter; a man thoroughly educated for his business would for 3s. 6d. make a cottage an arena of excellence. Shop fronts and signs, and all these things, are influences. It is impossible to live opposite an ill-painted shop front without being morally the worse for it. We are continually talking of our inferiority to France and Germany in designs. In these countries every man has received an education in art, from the designer to the lowest kind of workman, to enable him thoroughly to understand and to love the work to be done. These are the men to make work beautiful, and to do justice to the designer.—*J. A. Hammersley.*

VARIETY IN ART.—True art may, and ought, to provide the means of gratifying various tastes.—*Francis Horner.*

USEFUL RECEIPTS AND GENERAL INFORMATION.

Compo.—One pound of glue must be dissolved in one gallon of water. In another kettle boil together 2 lbs. of resin, 1 gill of Venice turpentine, and 1 pint of linseed oil; mix altogether in one kettle, and boil and stir till the water has evaporated. Turn the whole into a tub of finely rolled whitening, and work it until it is of the consistency of dough.

Another Receipt.—Boil 7 lbs. of best glue in 7 half-pints of water. Melt 3 lbs. of white resin in 3 pints of raw linseed oil. When the above has been well boiled, put them into a large vessel and simmer them for half-an-hour, stirring the mixture and taking care that it does not boil over. The whole must then be turned into a box of whitening, rolled and sifted, and mix till it is of the consistency of dough.

Gold Ink.—24 leaves gold, ½ oz. bronze gold, 30 drops spirits of wine, 30 grains honey, 4 drams gum arabic, 4 ozs. rain water. The gold must be rubbed with the gum and honey, and the whole mixed with water, and the spirit added.

Gold and silver inks used for illumination are simply the metals powdered very fine, and mixed in weak gum water. Gold leaf ground with honey and mixed with thin gum, will be found to work well for illuminations. This would work well for the gold line round mounts.

Gilder's Ormolu.—Quarter pint spirits of wine, ½ oz. garnet shellac, 1 dram red saunders wood, ½ dram turmeric. Strain.

Brush Polish.—The following receipt must be used warm and laid on with a brush. If the article to be polished be held to the fire before the application, a better polish will be the result. 2 ozs. shellac, 2 ozs. white resin, dissolved in one pint of spirits of wine, will be found to answer well for carved work or Oxford frames.

French Polish Reviver.—Half pint linseed oil, 1 oz. spirits of camphor, 2 ozs. vinegar, ½ oz. butter of antimony, ¼ oz. spirits of hartshorn.

ANOTHER.—One lb. naptha, 4 ozs. shellac, ¼ oz. oxalic acid. Let it stand till dissolved, and add 3 ozs. linseed oil.

To Clean Marble.—Mix with ¼ pint soap lees ½ gill turpentine, sufficient pipe clay and bullock's gall to make the whole into a rather thick paste. Apply it to the marble with a soft brush, and after a day or two, when quite dry, rub it off with a soft rag. Apply this a second or third time till the marble is quite clean.

Gold Varnish.—Sixteen parts shellac, 3 ditto gum sandrach, 3 do. mastic, 1 part crocus, 2 parts gum gamboge, and 144 parts alcohol.

ANOTHER.—Eight parts gum seedlac, 8 parts sandrach, 8 parts mastic, 2 parts gamboge, 1 part dragon's blood, 6 parts white turpentine, 4 turmeric, and 120 alcohol.

Linseed Oil Varnish.—Take 8 lbs. linseed oil and boil for one hour, then add 1 lb. best resin, previously powdered, and stir the mixture until the resin is perfectly dissolved. Now add ½ lb. turpentine, let the whole cool, and it is ready for use.

Black Varnish.—Dissolve in a glazed earthen vessel a small quantity of colophonium or boiled turpentine until it becomes black and friable, and gradually throw into the mixture three times as much amber finely pulverized, adding from time to time a little spirit or oil of turpentine. When the amber is dissolved, besprinkle the mixture with the same quantity of sarcocolla gum, continually stirring the whole, and add spirits of wine until the composition becomes fluid ; then strain it through a piece of hair cloth, pressing it between two boards. This varnish, when mixed with ivory black, should be applied in a warm place.

Colourless Varnish.—Dissolve 8 ozs. gum sandrach and 2 ozs Venice turpentine in 30 ozs. alcohol by a gentle heat. To make a harder varnish of a reddish cast, dissolve 5 ozs. shellac and 1 oz. turpentine in 32 ozs. alcohol by a very gentle heat.

Cabinet Maker's Varnish.—Half oz. gum mastic, ½ oz. gum sandrach, 1½ oz. gum shellac, and 20 ozs. spirits of wine. The two first should be dissolved in the spirits, and afterwards the shellac, and pour off the clear liquid for use.

Parisian Wood Varnish.—To prepare a good varnish for fancy woods, dissolve one part of good shellac in three or four parts of alcohol of 92 per cent. in a water-bath, and cautiously add distilled water until a curdy mass separates out, which is collected and pressed between linen ; the liquor is filtered through paper, all the alcohol removed by distillation from the water-bath, and the resin removed and dried at 100 degrees centigrade, until it ceases to lose weight. It is then dissolved in double its weight of alcohol, of at least 96 per cent., and the solution perfumed with lavender oil.

Impervious Varnish.—The Chinese apply to chests of tea, tobacco, sugar, coffee, &c., a varnish made of freshly-drawn blood, a little alum, and four parts of powdered slaked lime. One, two, or three coats of this mixture applied while viscid, renders the packages so impervious to moisture that zinc-foil, &c., becomes superfluous.

Varnishes.—In accordance with the nature of the solvent, varnishes are called spirit varnishes, turpentine or volatile oil varnishes, or fat oil varnishes. The first are those whose solvent is ether, chloroform, &c., rarely, but more commonly spirits of wine or wood spirit, dry off rapidly. These are very thin in coat when dry, and are best suited for paper, fans, or any fine work requiring perfect transparency in the varnishes. Volatile oil varnishes, in which the solvents are spirits of turpentine or coal naptha, or the like, are those mostly employed by the oil painter. What is called "French varnishing," now so much employed upon the wood of furniture, &c., consists in the application of alternate films of lac varnish and of linseed oil, with constant and sufficient friction to polish the compound film of spirito-fat oil varnish as soon as it has become thick enough to afford a glossy surface, the total thickness being exceedingly small. The method of varnishing employed by the carriage builder for his finest work is the very opposite of this. Over his last coat of paint he lays on coat after coat of copal or dammar varnish, until he has got a considerable thickness, often nearly one-tenth of an inch. When this to its full depth has got hard and perfectly vitreous in the warmth of the "varnishing room," the whole surface is literally ground off with pumice-stone and water until a perfect form, as to contour, and perfect superfices, have been procured, when the glossy face of the varnish is then polished by putty-powder, chamois skins, the hand, &c., just as a plate of looking-glass is polished.

Brushes for Varnishing.—Varnish brushes should be made of long white hairs, have a good spring, and be of the best quality. They should be worn flat, sharp, and thin at the point, as they will lay on the varnish so much more regularly. No oil brush should be put into the varnish; if so, they should be well washed first in turpentine, and well squeezed out. It is important to pay a little attention to brushes when not in use, and oil varnish brushes should be *suspended* in varnish of the same sort as used, care being taken that the varnish covers the hairs of the brush up to the binding or the tin. The advantage is that they are always clean, pliable, and straight. If brushes are kept in turpentine they become hard and harsh, and the turpentine left in the brush will cause the work to look cloudy or streaked.

A Spirit Varnish.—Take 1 gallon of alcohol, 1 lb. of gum sandarac, ½ lb. of gum mastic, 2 lbs. of best white resin, and 3 lbs. of gum benzoin; cut the gums cold. When they are thoroughly dissolved, strain the mixture through fine muslin, and bottle for use;

keep the bottle tightly corked. This is a beautiful varnish for violins and other musical instruments of wood, and for fancy articles, such as those of inlaid work. It is also well adapted for panel work and all kinds of cabinet furniture. There is required only one flowing coat, and it produces a very fine, mirror-like surface. Apply this varnish with a flat camel's hair or sable brush. In an hour after application the surface is perfectly dry.

French Polish Receipts.—1. One pint of naptha, 3½ ozs. of orange shellac, and ½ oz. of aleme. Darken with red sanders wood.—2. To 1 pint of spirits of wine add ½ oz. of gum shellac, ½ oz. of seed lac, and ¼ oz. of gum sandarac; submit the whole to a gentle heat, frequently shaking it, till the various gums are dissolved, when it is fit for use.—3. Shellac, 6 ozs.; naptha, 1 quart; sandarac, 1 oz.; and benzoin, ¾ oz.—4. Shellac, 3 ozs.; gum mastic, pulverized, ½ oz.; and methylated spirits of wine, 1 pint added. Let it stand till dissolved.—5. Shellac, 12 ozs.; gum elima, 2 ozs.; gum copal, 3 ozs.; and spirits of wine, 1 gallon; dissolve.—6. The following must be well mixed and dissolved: Pale shellac, 2¼ lbs.; mastic, 3 ozs.; sandarac, 3 ozs.; and spirits of wine, 1 gallon. After the above is dissolved, add 1 pint of copal varnish, 1¼ ozs. of shellac, ½ oz. of gum juniper, ½ oz. of benzoin, and ½ pint of methylated alcohol.—7. Gum mastic, seedlac, sandarac, shellac, and gum arabic, 1 oz. each; pulverize and add ¼ oz. of virgin wax. Dissolve in 1 quart of rectified spirits of wine.

Oak Varnish.—Pale clear resin 3½ lbs., and oil of turpentine, 1 gallon, dissolved. Lampblack hardened will darken the colour.

The following receipts for staining were communicated to the *Furniture Gazette* by a practical workman:—

Black for Ebonizing Moulding, Frames, &c.—Take 1 gallon of strong vinegar, 2 lbs. extract of logwood, ½ lb. of green copperas, ¼ lb. of China blue, and 2 ozs. of nut-gall. Put these in an iron pot and boil them over a slow fire till they are well dissolved. When cool the mixture is ready for use. Add to the above ½ pint of iron rust, obtained by steeping iron filings in strong vinegar. The above makes a perfect jet-black, equal to the best black ebony, and the receipt is a valuable one.

A Cleansing and Renovating Polish.—Take of olive oil 1 lb., of rectified oil of amber 1 lb., spirits of turpentine 1 lb., oil of lavender 1 oz., and tincture of alkanet root ½ oz. Saturate a piece of cotton batting with this polish, apply it to the wood, then, with soft and dry cotton rag, rub well and wipe off dry. This will make old furniture in private dwellings, or that which has been shop-worn in warerooms, look as well as when first finished. The articles should be put into a jar or jug, well mixed, and afterwards kept tightly corked. This is a valuable receipt, and not known, he believes, outside the writer's practice.

A Cheap but Valuable Stain for the Sap of Black Walnut.—

Take 1 gallon of strong vinegar, 1 lb. dry burnt umber, ½ lb. fine rose-pink, ½ lb. dry burnt vandyke brown. Put them into a jug and mix them well; let the mixture stand one day and it will then be ready for use. Apply this stain to the sap with a piece of fine sponge; it will dry in half an hour. The whole piece is then ready for the filling process. When the work is completed, the stained part cannot be detected even by those who have performed the job. This receipt is of value, as by it wood of poor quality and mostly of sap, can be used with good effect.

A Walnut Stain to be used on Pine and White wood.—Take 1 gallon of very thin sized shellac; add 1 lb. of dry burnt umber, 1 lb. of dry burnt sienna, and ¼ lb. of lampblack. Put these articles into a jug and shake frequently until they are mixed. Apply one coat with a brush. When the work is dry, sand-paper down with fine paper, and apply one coat of shellac or cheap varnish. It will then be a good imitation of solid walnut, and will be adapted for the back-boards of mirror frames, for the backside and inside of case-work, and for similar work.

A Rosewood Stain of a very Bright Shade.—Take 1 gallon of alcohol, 1½ lbs. of cam-wood, ½ lb. red sanders, 1 lb. of extract of log-wood, and 2 ozs. of aquafortis. When dissolved, it is ready for use. This makes a very bright ground. It should be applied in three coats over the whole surface. When it is dry, sand-paper down to a very smooth surface, using for the purpose a very fine paper. The graining is then to be done with iron rust, and the shading with asphaltum, thinned with spirits of turpentine. When the shading is dry, apply one thin coat of shellac, and when this is dry sand-paper down, as before, with fine paper. The work is then ready for varnishing.

A Satinwood Stain for the Inside of Drawers.—Take 1 quart of alcohol, 3 ozs. of ground turmeric, 1½ ozs. of powdered gamboge. When this mixture has been steeped to its full strength, strain through fine muslin. It is then ready for use. Apply with a piece of fine sponge, giving the work two coats. When it is dry, sand-paper down very fine. It is then ready for varnish or French polish, and makes an excellent imitation of the most beautiful satinwood.

A Cheap Black Stain for Pine or Whitewood.—Take 1 gallon of water, 1 lb. of logwood chips, ½ lb. of black copperas, ½ lb. of extract of logwood, ½ lb. of indigo blue, and 2 ozs. of lampblack. Put these into an iron pot and boil them over a slow fire. When the mixture is cool, strain it through a cloth, and add ¼ oz. of nut-gall. It is then ready for use. This is a very good black for all kinds of cheap work.

A Crimson Spirit Stain.—Take 1 quart of alcohol, 3 ozs. of Brazilwood, ½ oz. of dragon's blood, ½ oz. of cochineal, and 1 oz. of saffron. Steep to full strength and strain. It is a beautiful stain

for violins and other wooden musical instruments, work-boxes, and fancy articles.

Flat Hog-Hair Brushes.—These brushes will be found the best for gilders' use; and as they are ordered by number, we give the number and exact size of the brush, so that a proper selection may be made, and no trouble in ordering the same. Up to No. 6 they are about 4/- per dozen, and from No. 8 to 12, 9/- per dozen. If there is any difficulty in obtaining them, Mr. C. H. Savory, carver and gilder, Caxton house, Cirencester, would supply them. (See page 199.)

Writing and Striping Pencils.—For decorators, these are indispensable, and for use for oil gold size the sable brushes will be found superior. We give the sizes of duck, goose, and crow.

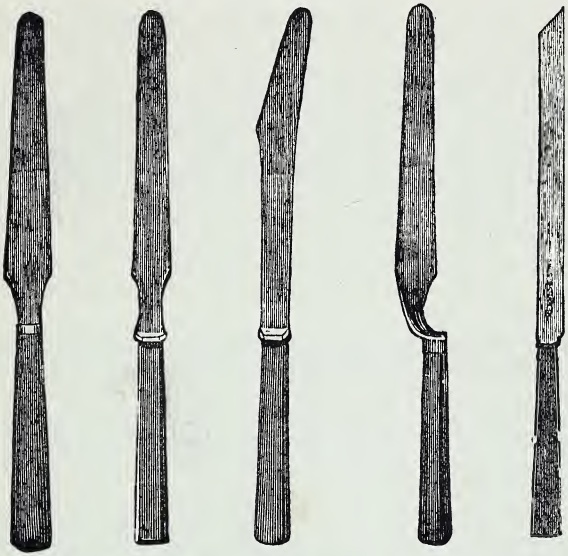
Palette Knives.—In mixing gilders' preparations, and especially oil gold size, it is very convenient to have at hand a good palette knife. They may be obtained of the following shapes, as illustrated on opposite page.

The following is extracted from a work entitled *Workshop Receipts.*

Imitating Rosewood.—1. A transparent liquid rosepink, used in imitating rosewood, consists in mixing ¼ lb. potash in 1 gallon hot water, and ¼ lb. red sanders wood is added thereto; when the colour of the wood is extracted, 2½ lbs. gum shellac are added and dissolved over a quick fire. The mixture is then ready to be used on a groundwork made with logwood stain.—2. Boil ½ lb. logwood in 3 pints water till it is of a very dark red, and add ½ oz. salts of tartar. While boiling hot, stain the wood with two or three coats, taking care that it is nearly dry between each; then with a stiff flat brush, such as is used by painters for graining, form streaks with black stain. This imitation will very nearly equal the appearance of dark rosewood.—3. Stain with black stain, and when dry, with a brush as above dipped in the brightening liquid, form red veins in imitation of the grain of rosewood. A handy brush for the purpose may be made out of a flat brush, such as used for varnishing; cut the sharp points off, and make the edges irregular by cutting out a few hairs here and there, and you will have a tool which will actually imitate the grain.

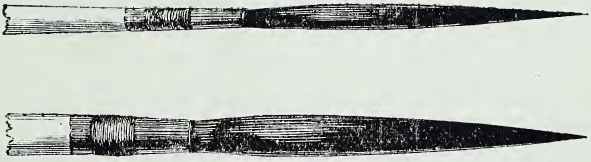
Black Stain.—Boil 1 lb. of logwood in 4 quarts of water, and add a double handful of walnut peel or shells; boil it up again, take out the chips, add a pint of the best vinegar, and it will be fit for use; apply it boiling. This will be improved if, when dry, a solution of green copperas, an ounce to a quart of water, is applied hot over the first stain.

Black Stain for Immediate Use.—Boil ½ lb. of chip logwood in 2 quarts of water, add 1 oz. of pearlash, and apply it hot. Then take ½ lb. of logwood, boil it in 2 quarts of water and add ½ oz. of



Palette Knives.

Strigers.

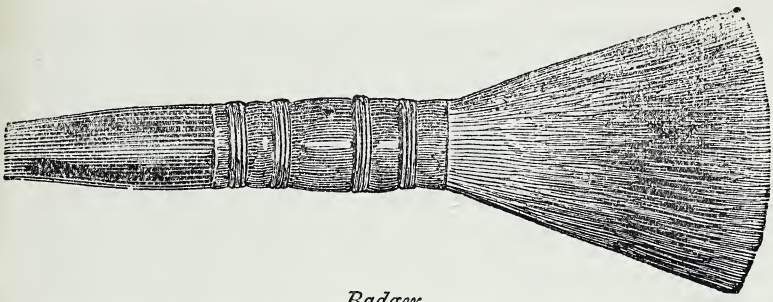


Writers.

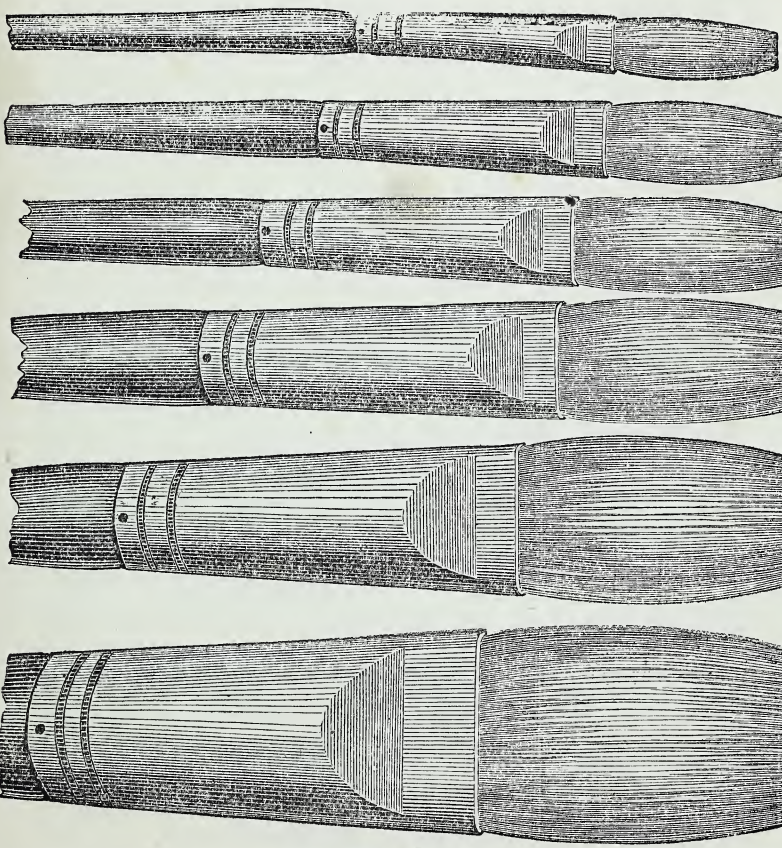
verdigris and ½ oz. of copperas ; strain it off, put in ½ lb. of rusty steel filings ; with this go over the work a second time.

Method of Cleaning Prints.—Immerse the print for an hour or so in a ley made by adding to the strongest muriatic acid its own weight in water, and to three parts of this mixture adding one of red oxide of manganese. A print, if not properly clean, may remain in this liquid for twenty-four hours without harm. Indian ink stains should in the first instance be assisted out with hot water ; pencil marks taken out with indiarubber so carefully as not to injure the engraving. If the print has been mounted, the paste on the back should be thoroughly removed with warm water. The saline crystal left by the solution may be removed by repeated rinsings in warm water.—*Art Union.*

Glazing Paintings.—Most pictures are painted within the year of their exhibition (a fact to be deplored, but so it is) ; these pictures are painted on up to the moment of exhibition ; varnish is largely used to bring out the sunken tones. This varnish is hardly dry, in many cases not dry at all, when the doors of the Academy are thrown open ; thousands of the public are admitted, bringing with them dirt of all sorts, from road scrapings to London blacks. This dirt is deposited on the wet pictures never to be eradicated. But there is a greater danger still ; pictures crack and split which are varnished before being really dry. The varnish chills in a short time ; another coat is applied, which acceerates ruin, the inevitable result of such practices. Varnish applied with judgment three or four years after a picture is completed is not only good, but in our damp climate, necessary ; but if applied too soon it is the scaffold, the rope, and the hangman. It may be said in answer, "If this is the case why send a new picture?" Admirable but Utopian query, which cannot apply to the rapid demand and supply of the present day. No ! we must face our evils, accept our disadvantages, and get out of them in the surest and best way we can. A visit to the "old masters" will show pictures upon pictures, noble works ruined by varnish, works which should not only stimulate painters by their nobility, but warn them by their delapidation. The buyer of pictures should tremble when his picture is varnished, and he is the person who should begin reform, namely, by making it a condition of purchase that the Royal Academy should not decorate their walls with his picture while a rule prohibiting protection by glass exists. A picture may be unequally dried ; it may distress a sensitive painter (and all painters should be sensitive,) by its varied surface ; whereas, if placed under glass, the surface is more or less equalised, and no varnish or oiling out, or other cracking or blackening process, is needed ; it is protected from dust and the blacks of London, and either returns to the painter or to the purchaser a clean and whole possession. In time it may be varnished, and, if desirable, the glass removed, though this latter would not be well in London, as we



Badger.



Hog-Hair Brushes.

know by our blinds, silks, or embroideries, which, if exposed, require constant cleaning—a process which no one in his senses will think good for a picture. Probably the only ornament against glass at the Academy Exhibition which is worth notice, is that it might destroy symmetry ; but this is answered immediately, we think, by saying that pictures are painted to last for the owners, and not for the decoration of the Royal Academy walls alone.—*Athenæum.*

To Remove Stains from Prints.—Sponge the print with clean water, and then apply to the discoloured parts a solution of the chloride of lime, diluted with twice the quantity of rain water, rinse the picture with clean water, and lay between sheets of blotting paper.

Ink Spots in Mahogany.—To take out ink spots in mahogany, apply spirits of salts with a sponge till the ink disappears.

To Revive the Gilt of Picture Frames.—Beat up 3 ozs. of the whites of eggs with 1 oz. of chloride of potash or soda. Brush the frame carefully over with the above, when the frame will have a much fresher appearance.

To Take Ink Out of Paper.—Two drams of muriate of tin, mixed with double its quantity of water, applied with a soft brush, will bring out the ink. The paper must be well rinsed in water to wash off the stain. A strong solution of oxalic acid will take ink out of paper.

ANOTHER.– Citric or tartaric acids can be applied to the leaves of books or engravings to take out ink stains.

Mounting and Mounting Materials.—The following has been communicated to the *Photographer's Daily Companion* by J. G. Tunny :—Flour-paste is very seldom used now ; but if any still adhere to it they should at once abandon it, as it soon passes into the sour or acid condition, and the fading principle is at once set up. Starch-paste has many of the properties of the flour-paste, but is more universally used, and therefore the greater need of care being taken that it be never used after the day on which it is made —if made in the ordinary way. If to every ounce of starch-powder there be added one ounce of methylated spirit and three drops of pure carbolic acid, the keeping qualities are prolonged indefinitely ; the spirit and carbolic acid to be added when the paste is a little more than luke-warm. But the material I am about to describe has advantages which neither of the others possess. Take best Bermuda arrowroot 1¾ ozs., and sheet gelatine or best Russian glue 80 grains. Put the arrowroot into a small pan, add one ounce of water, and mix it thoroughly up with a spoon, or the ordinary mounting-brush, until it is like thick cream ; then add 14 ozs. of water, and the gelatine, broken into small fragments.—Boil for four or five minutes, set it aside until partially cold, then add 1 oz. of methylated spirit, and six drops of pure carbolic acid. Be very particular in adding the spirit in a gentle stream, stirring rapidly all the time. You have

now 15 ozs. of the best mounting material you have ever used. Keep it in a corked stock bottle, and take out as much as may be required for the time into a gallipot; work it up nicely with the brush, and you will have a material as smooth as cream, without lumps or grit, and which will not decompose.

Portrait Sizes.—Standard portrait sizes are as follows :—

Portrait,	Head size	24 in. by 20 in.
„	Three-quarter size	30 „ 25 „
„	Kitcat	36 „ 28 „
„	Small half length	44 „ 34 „
„	Half length	50 „ 40 „
„	Bishop's half length	56 „ 44 „
„	Whole length	94 „ 58 „
„	Bishop's whole length	106 „ 70 „

Thin Glue.—Many are unaware that thin glue can be very quickly liquified for use without the usual interposing medium of water. The most convenient form of using thin glue is in an earthenware pot that will stand the heat. A pot about 4 inches in diameter, with a handle, can be bought at every earthenware depot. Into the pot pour glue from the usual glue pot and thin down; when, if glue is wanted in a minuite or two, it can be had by holding the pot over the gas jet, or on the stove or kitchen fire. The brush should stand in the glue, and will be ready for use. Carvers and gilders adopt this plan and find it very convenient in the picture frame trade. The amateur would find it a great convenience in his work-room.

Softening Composition Ornaments.—Several correspondents have written to the author of this volume to enquire how composition ornaments may be softened when once they are hardened, before mounting on frames. The method that can be adopted is simple: by laying a piece of calico over a saucepan of boiling water and putting the ornaments required to be softened on the calico, in a very short time they will be found flexible and ready to be glued in their place. Compo. is softened easily by folding up a large cake in a cloth and putting it to steam over a saucepan. When softened it is worked on a board with whitening, like dough, and the ornaments moulded.

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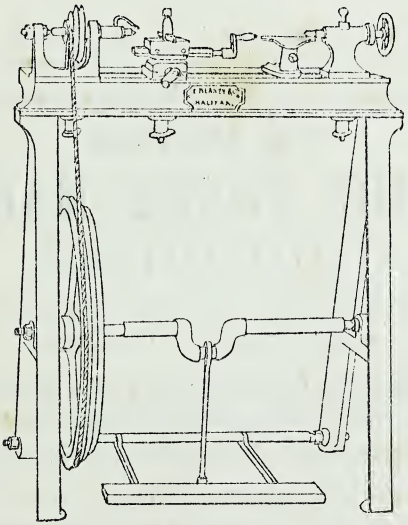

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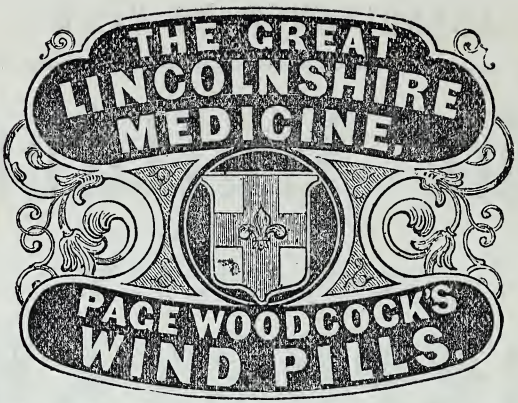

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IMPORTANT TESTIMONIAL FROM OLDHAM.

8, Check Street, Glodwick Road, Oldham,
Page D. Woodcock, Esq. *April* 21st, 1876

Sir,—I feel it to be my duty to you and the public and also to inform you of the great benefit I have derived from taking your invaluable Wind Pills. One of your men left me a bill a short time since, and I was suffering very much at the time from Wind on the Stomach and Indigestion, and Spasms; I read the paper, and thought it was just the medicine to meet my case; I was at the time under one of the best medical men in Oldham, but found little or no relief till I went to Messrs. Braddock and Bagshaw's Chemist's Shop, Yorkshire Street, your agents for the above Wind Pills. I purchased a 2s. 9d. box, and I never found any medicine that has proved to me so great a blessing, and *I thank God for it.* Before I took your Wind Pills I was Nine Weeks and never was at the end of the Street where I live; I almost despaired of ever being better again, but I am happy to inform you that I am better now than I have ever been for years, and I attribute it all to the use of your Pills. I am never without them in the house, and the best of all is I have never needed a doctor since, and before that I was Four Years and never was I free from their attendance. I send you this testimonial so that you may make any use of it you think proper for the benefit of the public and the good of those that are suffering as I was. Wishing you every success, and that under God you still may be a great blessing to suffering humanity. I remain yours truly,

Mrs. RATCLIFFE.

Witness to the above statement as being correct, JOHN HARROP, 71, High Street, East Glossop, *Wholesale Agent.*

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I remain, yours truly,

MR. P. D. WOODCOCK. JAMES ALSTON.

Dear Sir, 48, BURY STREET, HEYWOOD.

Allow me to express my gratitude to you for the unspeakable benefit I have received from your Cough Pills; I was suffering at the time from a most distressing Cough, and could not sleep, could not go up or down a hill without continually resting, and having a dreadful fit of Coughing; Doctors gave me up, and at last I was recommended to try a box of your Pills, which I obtained from your agent, Mr. Beckett, Chemist, Market Place; the result was magical, after taking them the Cough entirely left me, I have now peaceful nights, sleep well, breathe easily, and can walk about with the greatest ease. You can make use of this in any way you think proper, for the benefit of sufferers such as I have been,

Believe me, yours truly,

To P. D. WOODCOCK, ESQ. BENJAMIN CROPPER.

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MANCHESTER TESTIMONIAL.

257, Oldham Road, Manchester, Nov. 19th, 1868.

Mr. Page Woodcock, Norwich.

Dear Sir,—I have often thought I would send you a note stating the benefit I had derived from the use of your Nervine. Mr. Harrop called upon me a short time ago and desired me to do so, and because of the service he did me, I now send you this statement. About two years ago I suffered very severely from Tic-doloreux. I had continued attacks for two or three months relieved by external applications, and by taking Quinine Iron, Morphia, and other things, but returning again continually.

One day your agent, Mr. Harrop, called upon me on business, and being told what pain I was in, at once advised the use of your " Henry's Nervine " and as I promptly refused to open a bottle, for I had not the slightest confidence in any of the advertised remedies, and if Mr H. had not had a bottle in his pocket, I should not have tried it. He having this bottle, with a little difficulty obtained my consent to apply it to my face, and immediately, to my astonishment and delight, I was free from pain; be sure that I was very much pleased, and very thankful to Mr. H. I continued free from a return of Tic for about two months; when, visiting a brother, it returned, and for some hours I endured much pain, until unable to endure it any longer, I returned home, and opened a bottle, and applied it as directed, was again immediately relieved, and thankful I am to say I have felt nothing of Tic-doloreux since. You are aware I have sold very much of the Nervine since that time, and I can say it very rarely fails to afford immediate relief. I am sure it ought to be used at once by all suffering from such a very painful complaint; and should this statement induce those suffering to obtain it, and so free themslves from the suffering they have been enduring, I shall have been the means of doing that which has alone induced me thus to write and allow you to publish.

I am dear Sir, yours faithfully,
F. P. WILLIAMS, Dispensing Chemist.

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